A HAND-BOOK

TO THE

FLORA OF CEYLON.

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FLORA OF CEYLON

CONTAINING

DESCRIPTIONS OF ALL THE SPECIES OF FLOWERING PLANTS INDIGENOUS TO THE ISLAND,

AND

NOTES ON THEIR HISTORY, DISTRIBUTION, AND USES.

BY

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With an Atlas of Plates

ILLUSTRATING SOME OF THE MORE INTERESTING SPECIES.

Part II.

CONNARACEÆ—RUBIACEÆ.

WITH PLATES XXVI—L.

AND INDEX TO PARTS I. AND II.

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HANDBOOK TO THE FLORA OF CEYLON.

IT has been found desirable to make an alteration in the mode of publication of the text of this book. It was my ntention that the whole should have formed Two Volumes (each of about 800 *pages), the first Two Parts together making up Vol. I.; but, owing to the thick paper used, I find that such volumes would be too bulky and heavy for convenient use.*

Part II. is therefore now issued as a volume of itself, with fresh pagination; and the subsequent Parts will be treated in the same way.

An Index to the contents of Parts I. and II. is, however, now published with the present one.

H. T.

MAY 1 - 1905

CORRECTIONS IN PART I.

Page 7, line 14, for '*Thwaiterii*' *read Thwaitesii.*
„ 12, „ 15, for 'Kurawita' *read* Kuruwita.
„ 21, „ 17 from bottom, for '*Una*' *read Unona.*
„ 31, „ 11 from bottom, for 'Karanita' *read* Karawita.
„ 33, „ 7, for '*Sagenea*' *read Sageræa.*
„ 60, „ 2 from bottom, for 'tomatose' *read* tomentose.
„ 61, „ 8, for 'supra-tomatose' *read* rufous-tomentose.
„ 61, „ 10, for '2720' *read* 2, 720.
„ 62, „ 13 from bottom, for '3000' *read* 4000.
„ 78, „ 5, for '*neelghenense*' *read neelgherrense.*
„ 80, „ 3, for 'Pedum' *read* Peduru.
„ 90, „ 9, for 'Mont.' *read* Mant.
„ 96, „ 11, after 'Kokatiya' *add* , S.
„ 98, „ 19 from bottom, for 'and' *read* And.
„ 113, „ 6, after 'imbricate' *add* Cotyledons equal.
„ 113, „ 7, after 'imbricate' *add* Cotyledons very unequal.
„ 113, „ 8, after 'reflexed' *add* Cotyledons unequal.
„ 127, „ 10, *omit* 'near Pelmadulla (F. Lewis).'
„ 129, „ 16, 17, for 'paler beneath and pellucid-punctate with transmitted light,' *read* veinlets minutely reticulate, pellucid, with free dilated ends.
„ 143, „ 20 from bottom, before 'montane' *insert* upper.
„ 146, *omit* line 9.
„ 159, „ 17, for 'Macdowell' *read* Macdowall.
„ 160, „ 11, for 'are' *read* one.
„ 188, „ 8, for 'leaf' *read* vein.
„ 190, „ 5 from bottom, for 'Devadaram' *read* Tévataram.
„ 214, „ 11, for '*aukenda*' *read ankenda.*
„ 220, „ 3, after 'seeded' *add* red.
„ 225, „ 12, for 'Hanasgiriya' *read* Hunasgiriya.
„ 254, „ 3, *omit* 'Balu-nakuta, *S.*'
„ 272, „ 16, for 'McDowall' *read* Macdowall.
„ 287, „ 21 from bottom, for 'ERIOCLADA' *read* INDICA.
„ 288, „ 12 from bottom, for 'Rata' *read* Ratu.
„ 304, „ 1, for '*Schmedelia*' *read Schmidelia.*
„ 310, „ 3 from bottom, for 'Kadaganuwa' *read* Kadaganawa.

XLIII.—CONNARACEÆ.

SHRUBS or trees often scandent; l. imparipinnate (in *Ellipanthus* apparently simple), without stip.; fl. regular, bisexual, small; cal. deeply 5-fid., segm. equal, imbricate or valvate; pet. 5, equal; stam. 5 or 10 (5 shorter), inserted at base of or on cal.-tube, fil. slightly connate at base; carp. 5 or solitary, with 2 collateral ovules in each; fruit a solitary (rarely 2) follicle (rarely 2-valved); seed large, solitary, erect, surrounded by a large or small aril, without endosperm.

L. pinnate; stam. 10.
  Stam. all perfect . . . . 1. ROUREA.
  Five stam. with abortive anth. . . . . 2. CONNARUS.
L. 1-foliolate; stam. 5 . . . . 3. ELLIPANTHUS.

Of our four species, *Connarus monocarpus* occurs chiefly in the dry region; the others only in the wet, *C. Championii* and *Ellipanthus* (both endemic) extending into the lower montane zone.

1. ROUREA, *Aubl.*

A small, semi-scandent tree, l. imparipinnate, fl. small, regular; cal. very deeply 5-fid., segm. strongly imbricate, much enlarged in fruit; pet. 5; stam. 10, inserted on base of cal., fil. connate at base, the 5 opp. the pet. shorter than the other 5; carp. 5, distinct, styles slender; fruit a solitary curved follicle (rarely two); seed solitary, erect, with a small basal aril, no endosperm.—Sp 50; 12 in *Fl. B. Ind.*

R. santaloides, *W. & A. Prod.* 144 (1834). **Kirindi-wel,** *S.*
Herm. Mus. 10. Fl. Zeyl. n. 408 (*Santaloides*). *Ægiceras minus*, Gaertn. Fruct., i. 216. *Connarus santaloides*, Vahl Symb. iii. 87. Moon Cat. 49. Thw. Enum. 80. C. P. 749.
Fl. B. Ind. ii. 47. Gaertn. Fruct. i. t. 46 (fruit only). Bedd. Fl. Sylv. t. 11 (fl. only).

A scrambling shrub or small tree, branchlets slender, bark shining, purplish, buds pubescent; l.-rachis 3–6 in., slender, curved, glabrous, lflts. 5 or 7 (2 or 3 pairs and a terminal one), very shortly stalked, 2–3 in., oval or lanceolate, rounded at base, caudate-acuminate, glabrous, shining above, with prominent reticulate venation beneath; fl. small, ¼ in., on slender, jointed ped., arranged in lax, slender, erect or ascending, glabrous, racemose panicles, several of which arise from leaf-axil, bracts minute, hairy; cal.-segm. orbicular, very obtuse,

glabrous, very strongly imbricate; pet. much exceeding cal., oval-oblong, spreading; stam. erect, styles spreading; follicle ¾ in. or a little more, cylindrical, falcately curved, tapering to point, apiculate, striate, surrounded at base by a cup formed of the much enlarged and imbricated sep., dehiscing ventrally; seed about ⅜ in., oblong-ovoid, cotyledons plane-convex.

Moist low country, up to 3000 ft.; rather common. Fl. April.
Also on the Malabar coast of India.
Very strong ropes for tying buffaloes and strengthening fences are made by twisting the stems.

2. CONNARUS, *L.*

Shrubs often scandent; l. imparipinnate; fl. small, regular, in pyramidal panicles; cal. deeply 5-fid., segm. imbricate, not enlarged in fruit; pet. 5, distinct, erect; stam. 10, inserted in cal.-tube, fil. slightly connate at base, the 5 opp. sep. long, with perfect anth., the 5 opp. pet. short with abortive anth.; carp. 5 (4 often abortive), stigma small; fruit a follicle or 2-valved; seed solitary, with a large aril, cotyledons plane-convex, no endosperm.—Sp. 55; 13 in *Fl. B. Ind.*

Fruit distinctly stalked, not striate . . . 1. C. MONOCARPUS.
Fruit not stalked, striate . . . . . . 2. C. CHAMPIONII.

1. **C. monocarpus,** *L. Sp. Pl.* 675 (1753). **Radaliya,** *S.* **Chettupulukodi,** *T.*
Herm. Mus. 39, 54. Burm. Thes. 199. Fl. Zeyl. n. 248. *Omphalobium indicum,* Gaertn. Fruct. i. 217. *C. asiaticus,* Willd. and *C. pinnatus,* Lam., Moon Cat. 49. Thw. Enum. 80. C. P. 328.
Fl. B. Ind. ii. 50. Burm. Thes. t. 89. Gaertn. Fruct. i. t. 46, f. 3 (fruit).

A much-branched bush, young parts rusty-puberulous, l.-rachis 1½–2½ in., pubescent, thickened at base, lflts. 3 or 5 (1 or 2 pairs and a terminal one), on short, swollen, channelled stalks, 2–3 in., ovate-oblong or ovate-oval, rounded at base, obtuse, often twisted at apex, glabrous and somewhat shining above; fl. about ¼ in., articulated on short, stout, densely pubescent ped., crowded in erect, irregularly pyramidal, pubescent, paniculate cymes terminating the branchlets; cal.-segm. oblong-lanceolate, subacute, densely pubescent; pet. much longer than cal., oblong-linear, more or less pubescent outside; follicle 2¼ in., fusiform, slightly falcate, apiculate, tapering below into a narrow stalk, surrounded at base by the persistent but not enlarged cal. and pet., smooth, brilliant scarlet, splitting into 2 valves which are smooth within; seed

1 in., ovoid, slightly compressed, shining, purplish-black, surrounded at base by a large, pulpy, yellow aril.

Dry region, very common; moist low country in sandy places rather rare, *e.g.*, Colombo, Ratnapura, Deyandera, S. Prov. Fl. Sept.–Feb.
Also in Southern India.
Sir J. Hooker, in Fl. B. Ind., refers Burmann's figure to *Rourea santaloides;* but, though not very good, it clearly represents *C. monocarpus.* The ripe follicles with the seed are very pretty objects, hanging in clusters from the ends of the branches.

2. **C. Championii,*** *Thw. Enum.* 80 (1858). **Wel-radaliya,** *S.*
C. P. 2399.
Fl. B. Ind. ii. 52.

A climbing shrub, bark brown, rough with lenticels, young parts rufous-puberulous; l.-rachis 4–6 in., much tumid and wrinkled at base, cylindrical, smooth, lflts. 5–7, on short swollen stalks, 3–4 in., oval, rounded at base, caudate-acuminate, glabrous, shining above, veins prominent beneath; fl. under $\frac{1}{4}$ in., on very short rufous-hairy ped., arranged on spicate branches of spreading or pyramidal, rufous, axillary and terminal panicles, bracts small, rufous-woolly; cal.-segm. linear-lanceolate, acute, covered with red pubescence; follicle $1\frac{1}{4}$ in., obovoid, very blunt and truncate, tapering to narrow base (but not stalked), which is surrounded by persistent cal., nearly straight along upper edge, very gibbous along ventral suture, glabrous, striate with oblique ridges, opening by ventral suture only, scarlet; seed $\frac{3}{4}$ in., broadly ovoid, nearly black, aril as in the last.

Moist region, up to 4000 ft.; rather rare. Hantane; Hunasgiria. Fl. Jan.; cream-coloured.
Endemic.

3. **ELLIPANTHUS,** *Hk. f.*

Tree, l. reduced to a single lflt.; fl. small, regular, often unisexual, racemose; cal. deeply 5-fid., segm. valvate, persistent but not enlarged in fruit; pet. 5, spreading; stam. 5, alternating with 5 small, tooth-like fil. without anth., slightly connate at base; carp. solitary, style short, stigma dilated; fruit a follicle; seed solitary, with a large pulpy aril, cotyledons plano-convex, no endosperm.—Sp. 5; all in *Fl. B. Ind.*

E. Thwaitesii, *Hk. f. in Fl. B. Ind.* ii. 55 (1876).
Connarus unifoliatus, Thw. Enum. 80. *E. unifoliatus*, Hk. f., Id. 410.
C. P. 2443.
Fl. B. Ind. ii. 55. Bedd. Fl. Sylv. t. 170 (*E. unifoliatus*).

* Commemorates Capt. (afterwards Col.) J. G. Champion, 95th Regt., who was stationed in Ceylon 1838–47, and paid much attention to its Botany. Killed at Inkermann, in 1854.

A small tree, 20–30 ft., twigs smooth, purple, young parts puberulous; l. simple (unifoliolate), articulated on the short petiole, 2–3 in., oval, rounded at base, acuminate or slightly caudate, glabrous, rather coriaceous, reticulate venation prominent beneath; fl. $\frac{3}{8}$ in., articulated on short pubescent ped., 3–5 together, arranged in small axillary racemes less than 1 in. long; cal.-segm. linear-lanceolate, acute, rigid, pubescent; pet. longer than cal., obtuse, finely and densely pubescent; fil. hairy at base; ov. pubescent; follicle 1–1$\frac{1}{2}$ in., much falcate when young, afterwards nearly straight, tapering at base into a narrow stalk surrounded by persistent cal., sharply pointed, densely covered with yellow tomentum; seed $\frac{3}{4}$ in., blue black, shining, covered half way up by the dark pink pulpy aril, embryo green.

Moist region, 2000–4000 ft., rather rare. Deltota; Hunasgiriya; Gangala; Hantane; Maskeliya. Fl. Jan.; pale green.

Endemic.

E. unifoliatus is the older name; but, as it is applicable to the whole genus, Sir J. Hooker has rightly given a new one.

XLIV.—LEGUMINOSÆ.

HERBS, shrubs, or trees, often twining or climbing; l. alt., usually compound, with stip., lflts. always entire, often with stipels; fl. bisexual (rarely unisexual), irregular or regular; cal. more or less deeply cut, sometimes into separate sep., segm. usually 5, often unequal, or forming two lips; pet. 5, unequal or equal, or fewer, rarely connate or 0; stam. usually 10, often fewer, sometimes indefinite, inserted on base of cal.-tube, often declinate, fil. frequently diadelphous (9 and 1) or monadelphous, rarely distinct; ov. superior, with 1–many ovules on ventral suture, style simple, often declinate with the stam.; fruit a dry pod (legume), dehiscent along both sutures, or breaking up into joints, or indehiscent, rarely fleshy and drupe-like; seeds without (rarely with) endosperm, cotyledons large, generally plane-convex.

It is necessary to divide this vast Order into 3 Sub-orders, as follows:—

I. **Papilionaceæ.** Pet. unequal, papilionaceous, imbricate, the upper one (standard) outside in bud, the two lateral (wings) and two

lower (keel) in pairs; stam. 10 or less, usually di- or monadelphous. (Genera 1–47.)

II. **Cæsalpinieæ.** Pet. slightly unequal, imbricate, the upper one inside in bud; stam. 10 or less, distinct. (Genera 48–57.)

III. **Mimoseæ.** Pet. equal, more or less connate into a corolla, segm. valvate in bud; stam. often indef., distinct or connate. (Genera 58–64.)

The largest Order in the Ceylon Flora, containing 207 species, or nearly 7 per cent. of the whole. The majority of these, however, are of wide distribution, and we have only 12 endemic species, *Pericopsis* being the only endemic genus.

1. **Papilionaceæ.**

Stam. mon- or diadelphous.
  Pod not jointed.
  Pod dehiscent (exc. 6 and 7).
    Stems not twining.
      Stam. monadelphous (*Genisteæ*).
        Keel-pet. nearly free, anth. uniform . 1. ROTHIA.
        Keel-pet. connate, anth. dimorphous.
          Pod flat . . . . 2. HEYLANDIA.
          Pod inflated . . . . . 3. CROTALARIA
      Stam. diadelphous (exc. 6 and 7).
        L. 3-foliolate (*Trifolieæ*) . . . 4. PAROCHETUS.
        L. pinnate (rarely simple), (*Galegeæ*).
          Anth. apiculate; hairs attached by centre . . . . 5. INDIGOFERA.
          Anth. blunt; hairs basifixed.
            Pod indehiscent.
              Pod 1-seeded. Herb . . 6. PSORALEA.
              Pod several-seeded. Shrub . 7. MUNDULEA.
            Pod dehiscent.
              Without partitions between seeds 8. TEPHROSIA.
              With partitions . . . . 9. SESBANIA.
    Stems usually twining (exceptions in 27, 30, 37, 39, 40, 41)
      L. pinnate (*Vicieæ*) . . . . . 21. ABRUS.
      L. 3- (rarely 1-) foliolate (*Phaseoleæ*).
        Lflts. not gland-dotted.
          Style not bearded.
            Nodes of infl. not tumid.
              Pet. about equal.
                Stam. diadelphous.
                  Cal. segm. distinct . . 22. SHUTERIA.
                  Cal. truncate . . . 23. DUMASIA.
                Stam. monadelphous.
                  Anth. all fertile . . . 24. GLYCINE.
                  Alt. anth. abortive . . 25. TERAMNUS.
              Pet. very unequal.
                Keel longest . . . . 26. MUCUNA.
                Standard longest (trees) . 27. ERYTHRINA.
                Keel and standard longer than wings . . . . 28. STRONGYLODON.

Nodes more or less tumid.
  Stam. diadelphous.
    Herbaceous twiner . . . . . 29. GALACTIA.
    Erect tree . . . . 30. BUTEA.
  Stam. monadelphous.
    Seeds 5–10 . . . . . . 31. CANAVALIA.
    Seeds 2 or 3 . . . . . . 32. DIOCLEA.
Style bearded.
  Stigma oblique.
    Keel curved into a ring . . . 33. PHASEOLUS.
    Keel not or much less curved . . 34. VIGNA.
  Stigma terminal.
    Pet. unequal . . . . 35. CLITORIA.
    Pet. equal . . . . 36. DOLICHOS.
Lflts. gland-dotted.
  Seeds 3–6.
    Pod with deep lines between seeds 37. ATYLOSIA.
    Pod with faint lines . . . 38. DUNBARIA.
  Seeds 1 or 2.
    Funicle attached to end of hilum . 39. ERIOSEMA.
    Funicle attached to centre of hilum.
      L. pinnately 3-foliolate . . 40. RHYNCHOSIA.
      L. palmately 3-foliolate . . 41. FLEMINGIA.
Pod indehiscent (*Dalbergieæ*).
  Lflts. alternate
    Fl. white or pink . . . . 42. DALBERGIA.
    Fl. yellow . . . . 43. PTEROCARPUS.
  Lflts. opposite.
    Erect tree ; fruit not winged . . 44. PONGAMIA.
    Climbers ; fruit winged on back . 45. DERRIS.
Pod breaking up into 1-seeded joints (*Hedysareæ*), (exc. 16 and 17).
  Lflts. without stipels.
    Stam. monadelphous.
      Joints muricated . . . . 10. ZORNIA.
      Joints wrinkled . . . . 11. STYLOSANTHES.
    Stam. in two bundles of 5.
      Pod inclosed in cal. . . . 12. SMITHIA.
      Pod exserted.
        Cal. 2-lipped . . . . 13. ÆSCHYNOMENE.
        Cal. with 5 segm. . . . 14. ORMOCARPON.
  Lflts. with stipels.
    Pod 1-jointed and 1-seeded . . 15. ELEIOTIS.
    Pod not distinctly jointed, several-seeded.
      Pod turgid . . . . . 16. PYCNOSPORA.
      Pod flat . . . . . . 17. PSEUDARTHRIA.
    Pod distinctly jointed.
      Joints folded on one another . . 18. URARIA.
      Joints in a line, turgid . . . 19. ALYSSICARPUS.
      Joints in a line, flat . . . 20. DESMODIUM.
Stam. free (*Sophoreæ*).
  Pod moniliform . . . . . . 46. SOPHORA.
  Pod oblong . . . . 47. PERICOPSIS.

Of the 159 species in this Sub-order, as many as 131 are found only in the low country, where many are common weeds. Confined entirely to the dry region are 51 species, including 10 species of *Indigofera*, and all those of the following genera :—*Mundulea*, *Æschynomene*, *Ormocarpon*, *Strongylodon*, *Butea*, *Pterocarpus*, *Rothia*, *Heylandia*, *Psoralea*, *Stylosanthes*, and *Clitoria*. Limited to the moist low country are 25 species, including the genera *Dioclea*, *Vigna*, *Pseudarthria* and *Pericopsis*. The remaining 28 species are found in the montane region, but only 17 are confined to it, including the genera *Parochetus*, *Shuteria*, and *Dumasia*, 4 species of *Crotalaria*, 6 of *Desmodium*, and 2 of *Atylosia*.

The great majority are widely distributed plants, and only 9 are endemic to Ceylon.

1. ROTHIA, *Pers.*

Annual herb, l. 3-foliolate; fl. very small, in axillary racemes; cal.-segm. as long as tube, 2 upper broader; pet. nearly equal, clawed; keel-pet. very slightly coherent; stam. monadelphous, anth. uniform; style short, stigma capitate; pod linear, many-seeded, not septate within.—Sp. 2; 1 in *Fl. B. Ind.*

R. trifoliata, *Pers. Syn. Pl.* ii. 302 and 659 (1807).
Herm. Mus. 33. Fl. Zeyl. n. 285. *Trigonella indica*, L. Sp. Pl. 778. Moon Cat. 55. Thw. Enum. 82. C. P. 1452.
Fl. B. Ind. ii. 63. Wight, Ic. t. 199.

A much-branched, spreading, annual herb, stem slightly woody at base, branches slender, hairy (as is whole plant); l. small, rachis about $\frac{1}{4}$ in., slender, lflts. about $\frac{1}{2}$ in., sessile, narrowly lanceolate, subacute, minutely mucronate, hairy on both sides, stip. small, linear-oblong, acute, persistent; fl. on very short ped., solitary or 2–4 in very short axillary racemes; cal.-segm. lanceolate, acuminate, silky-hairy; pet. twice as long as cal.; pod $1\frac{1}{4}$ – $1\frac{3}{4}$ in.; narrowly linear, nearly straight, slender, silky-hairy, tipped with very slender style; seeds numerous, closely packed.

Dry region; common in sandy places. Fl. Feb. &c.; pale pink.
Throughout India, also in N. Australia.

Ulex europæus, L. The English Furze or Gorse is a conspicuous plant at Nuwara Eliya, where it is quite naturalised and seeds freely. It does not, however, spread much. The date of its introduction is not known to me.

2. HEYLANDIA, *DC.*

Annual herb, l. simple, without stip.; fl. small, solitary, axillary; cal. deeply cut, upper segm. slightly coherent; wing-pet. much shorter than standard, keel-pet. connate; stam.

monadelphous, anth. dimorphous, 5 large and 5 small; style long, sharply bent at base; pod small, flat, 1–2-seeded.—Monotypic.

H. latebrosa, *DC. Mem. Leg.* 201 (1825).
Thw. Enum. 81. C. P. 1275.
Fl. B. Ind. ii. 65. DC. l.c. t. 34 (*H. hebecarpa*).

An annual herb, with numerous prostrate spreading branches 6–24 in. long, much branched, clothed with long spreading hair; l. numerous, small, close, nearly sessile, simple, broadly ovate, cordate and often unequal at base, apiculate, sparingly hairy on both sides, minutely punctate, stip. 0; fl. nearly sessile in the axils; cal.-segm. acute; pet. much exserted; pod very small, $\frac{1}{8}$ in., surrounded at base by persistent cal., ovate-oblong, compressed, tipped by long style, smooth or with a few long hairs, pale brown.

Dry region; common. Extending also into the intermediate region as Galagama, Nalande, Etampitiya, &c. Fl. Nov.–April; yellow.
Also throughout India.
There are specimens from Moon, 1819, in Mus. Brit., but it is not included in his Cat., unless his *Crotalaria humifusa*, Cat. 52, be this.

3. CROTALARIA, *L.*

Herbaceous or semi-shrubby; l. simple or 3- (very rarely 5-) foliolate, with or without stip.; fl. in terminal or leaf-opposed racemes; cal.-tube campanulate, short, segm. nearly equal, the upper 2 often more or less connate; wing-pet. shorter than standard, keel-pet. equalling wings, completely connate and prolonged into a sharp curved beak; stam. monadelphous, anth. dimorphous; style long, abruptly curved upwards at base, stigma minute; pod sessile or stalked, straight, turgid or inflated, usually many-seeded, rarely 1-seeded.—Sp. about 300; 77 in *Fl. B. Ind.*

Leaves simple.
 Racemes solitary; seeds numerous.
  Stems prostrate or ascending, diffuse, herbaceous.
   Stip. 0.
    Fl. 1–4 in raceme.
     Pod globular . . . . . . 1. C. BIFLORA.
     Pod oblong . . . . 2. C. PROSTRATA.
    Fl. 4–20 in raceme.
     L. linear-spathulate . . . . 9. C. ALBIDA.
     L. oval-oblong; raceme capitate. . 10. C. NANA.
     L. obovate-oblong; raceme lax . . 11. C. LINIFOLIA.

Stip. present.
Pod glabrous.
L. oval; stip. foliaceous . . . . 3. C. FERRUGINEA.
L. linear; stip. small . . . . 7. C. MYSORENSIS.
Pod hairy.
Stem nearly cylindrical . . . . 4. C. EVOLVULOIDES.
Stem strongly triquetrous . . . 8. C. TRIQUETRA.
Stem erect, robust, often semi-shrubby.
Stip. large, decurrent . . . . . 6. C. RUBIGINOSA.
Stip. small, not decurrent.
Fl. yellow.
Pod glabrous.
Plant very hairy . . . . 13. C. CALYCINA.
Plant nearly glabrous . . . 14. C. RETUSA.
Pod puberulous . . . . . 16. C. WALKERI.
Pod densely hairy . . . . 5. C. MULTIFLORA.
Fl. purple . . . . . . 15. C. VERRUCOSA.
Stip. 0.
Pod glabrous . . . . . . 12. C. TECTA.
Pod hairy . . . . . . 17. C. JUNCEA.
Racemes panicled; seed solitary . . . 18. C. LUNULATA.
Leaves compound.
Pod small, subglobose, 1–2-seeded . . . 19. C. MEDICAGINEA.
Pod large, oblong, with many seeds.
Lflts. oval.
Pod with a short stalk
Pod silky, 10–12-seeded . . . . 20. C. CLAVATA.
Pod glabrous, 20–30-seeded . . . 21. C. STRIATA.
Pod with a very long stalk . . . . 22. C. LABURNIFOLIA.
Lflts. linear-oblong . . . . . 23. C. QUINQUEFOLIA.

1. **C. biflora,** *L. Mant. Alt.* 570 (1771).
C. nummularia Willd., Moon Cat. 52. Thw. Enum. 81 and (*C. globosa*) 410. C. P. 3325, 3736.
Fl. B. Ind. ii. 66.

Herbaceous, annual (?), with copious, trailing, very much-branched, elongated, silky or hairy stems; l. small, ¼–¾ in., nearly sessile, simple, ovate or roundish, mucronate; hairy on both sides, without stip.; fl. solitary or 2 together at end of slender hairy ped. twice as long as l.; cal.-segm. long-acuminate, hairy; pet. scarcely longer than cal.; pod about ½ in., shortly stalked, nearly globular, pericarp soft, compressible, set with scattered hairs; seeds about 20, smooth, brown.

Dry region; rare. Jaffna, abundant; Trincomalie (Glenie). Gardner's specimens (C. P. 3325) have no locality. Fl. Feb., March; yellow.
Also in Peninsular India and Java.
The true *C. globosa*, W. and A., has not been collected in Ceylon. The Jaffna specimens are less slender than the Trincomalie ones, and rather shaggy-woolly than silky.

2. **C. prostrata,** *Roxb. Hort. Beng.* 54 (1814).
Thw. Enum. 81. C. P. 1266.
Fl. B. Ind. ii. 67.

Annual, with many slender, ascending, hairy branches, l. sessile, ½–1 in., oblong, obtuse, usually unequal and subcordate at base, hairy on both sides especially beneath, without stip.; fl. small, pedicellate, in racemes of 2–4, peduncle slender, divaricate, hairy, very much exceeding l.; cal.-segm. very hairy; pet. scarcely exceeding cal.; pod small, scarcely ½ in., oblong, inflated, glabrous; seeds about 12, small, highly polished.

Dry region; rather rare; extending into intermediate region. Uma-oya; Etampitiya; Batticaloa; Ekiriyankumbura. Fl. March, April; yellow.

Also in India and Java.

3. **C. ferruginea,** *Grah. in Wall. Cat.* 5398 (1828).
Thw. Enum. 81. C. P. 1265.
Fl. B. Ind. ii. 68.

A tall herb with long ascending branches covered with short, fulvous or pale yellow hair; l. 1¼–2½ in., distant, very shortly stalked, oval or oblong or obovate-oval, acute at base, obtuse and mucronate at apex, hairy on both surfaces, paler beneath, stip. conspicuous, ¼ in. or more, foliaceous, acuminate, spreading, persistent; fl. rather small, on very silky ped., in lax, elongated, very silky, erect, few-fld., leaf-opposed racemes, bracts very acute, persistent; cal.-segm. all elongated, very acute, densely silky; pet. scarcely as long as cal.; pod about 1 in., oblong, inflated, tapering to base but not stalked, tipped with short, stiff, recurved style, smooth, veined, black; seeds about 30.

Moist region, from 2000 to 4000 ft., rather rare. Near Kandy; Ramboda; Maturata; Lunugala; Ella. Fl. all the year; pale yellow.

Also in E. Bengal, Burma, Java, and the Philippines.

4. **C. evolvuloides,** *Wight in Wall. Cat.* n. 5410 (1828).
Arn. Pug. 11. Thw. Enum. 81. C. P. 3593.
Fl. B. Ind. ii. 68.

A much-branched straggling herb, semi-woody at base, branches elongated, divaricate, slightly angular, hairy-pubescent; l. ¾–1½ in., on very short, hairy petioles, varying from rotundate to oval or oblong-lanceolate, obtuse, mucronate, rounded at base, glabrous above, shortly hairy beneath, stip. small, linear; fl. rather small, on short pubescent ped., laxly arranged in elongated, curved, pubescent, few-fld., secund, axillary racemes greatly exceeding l., bracts small; cal.-segm. acute, pubescent; pet. rather longer than cal.; pod small, scarcely ¾ in., broadly ovoid, inflated, not stalked, tipped with strong base of style, densely hairy, pale yellowish-brown; seeds about 12.

Dry region; rare. Uma-oya; Seven Korales district; Ekiriyankumbura, Uva. Fl. Jan.-April; yellow.

Also in S. India.

5. **C. multiflora,** *Benth. in Lond. Journ. Bot.* ii. 478 (1843).
C. bifaria, var. (?) *multiflora*, Arn. Pug. 11. Thw. Enum. 81. C. P. 1268.
Fl. B. Ind. ii. 69.

A robust herb, not much branched, branches stout, cylindrical, curved, densely and softly hairy; l. on very short hairy petioles, numerous, rather closely placed, very variable in form and size, 1–4 in., rotundate or broadly or narrowly ovate or ovate-lanceolate or linear, rounded at base, acute and apiculate at apex, shortly hairy on both sides, pale and with prominent reticulation beneath, stip. linear, small, divaricate or reflexed; fl. very large, 2 in., on stout nodding ped., 2–6 arranged in racemes at end of long axillary (or apparently terminal) peduncles, bracts small, reflexed; cal. 1 in., segm. foliaceous, lanceolate, acute, pubescent; pet. much exserted; pod $1\frac{1}{2}$ in., oblong-ovoid, not stalked, cylindrical, tipped with long style, densely clothed with fulvous or brown silky hair, pale green blotched with purple; seeds about 12.

Montane zone, up to 6000 ft., on the patanas; rather common. Dolosbagie; Elk Plains; Hewahette; Bandarawella; Haputale. Fl. Sept., Oct.; sulphur-yellow with purple veins.
Endemic.
The most ornamental of our species, with very large showy flowers; but the name *multiflora* is scarcely justified.

[*C. bifaria*, L.f. is given for Ceylon in Fl. B. Ind. ii. 69, on the faith of a specimen so labelled by Mr. Bentham in Hb. Kew, without collector's name. An error is probable, and the specimen really from S. India.]

6. **C. rubiginosa,** *Willd. Sp. Pl.* iii. 973 (1800).
C. Wightiana, Grah., Thw. Enum. 81. C. P. 2772.
Fl. B. Ind. ii. 69. Wight, Ic. t. 885.

A robust herb, erect or suberect and spreading, usually much branched, 1–2 ft. high, stem softly hairy; l. very variable, 1–2 in., very shortly stalked, broadly oval or oblong-linear, very obtuse, apiculate, more or less densely silky or velvety with golden or grey hair, lat. veins strongly marked beneath; stip. large, decurrent on stem so as to form wings with the upper part dilated falcate and spreading; fl. moderate-sized, on curved, silky ped. 1–3 in., in long racemes, peduncle leaf-opposed, spreading or ascending, stiff, silky, bracts ovate, acute, bracteoles immediately beneath cal. lanceolate; cal.-segm. large, nearly $\frac{3}{4}$ in., acuminate, densely silky with golden or fulvous hair; pet. scarcely longer than cal.; pod $1\frac{1}{2}$–$1\frac{3}{4}$ in., shortly stalked, narrowly oblong-ovoid, turgid, tipped with sharp hooked stiff base of the style, glabrous, pale brown, often marked with white streaks; seeds 20–30.

Montane zone, up to 6000 ft. on the patanas ; rather common, especially in the Uva Province, where it also occurs at lower elevations, as at Bibile. Fl. Aug. ; pale yellow.

Also on the Nilgiris.

Easily known by the stipular wings to the stem. Our form (*C. Wightiana*, Grah.) is usually more robust than the type, but it occurs also on the S. Indian hills, and there are intermediate forms.

7. **C. mysorensis,** *Roth Nov. Pl.* 338 (1821).
Thw. Enum. 82. C. P. 3594.
Fl. B. Ind. ii. 70 (not given for Ceylon).

An erect herb, 2–3 ft., with numerous long ascending branches, densely hairy, with long, spreading hair; l. 1½–2½ in., numerous, ascending, nearly sessile, linear or strap-shaped, obtuse, strongly apiculate, covered, especially beneath, with long, white, spreading hair, stip. acicular-linear, strongly apiculate, ⅜ in., spreading ; fl. moderate-sized, on ½ in. ped., in lax, erect, terminal racemes; cal.-segm. ⅝ in., very acuminate, upper ones lanceolate, lower linear, all clothed with long, spreading hair ; pet. slightly longer than cal. ; pod 1¼ in., oblong-ovoid, narrowed at base but scarcely stalked, truncate at apex, which is tipped by the very strongly deflexed base of style, glabrous, pale brown ; seeds about 30.

Dry region ; rare. Batticaloa ; Nilgala ; Uma-oya. Fl. Jan.–April ; yellow.

Throughout Peninsular India.

A handsome plant, covered with long silvery hair, which becomes fulvous in drying.

8. * **C. triquetra,** *Dalzell in Kew Journ. Bot.* ii. 34 (1850).
Thw. Enum. 410. C. P. 3832.
Fl. B. Ind. ii. 71.

A spreading under-shrub, 1–2 ft. high, with numerous, slender, ascending, strongly triquetrous, slightly hairy branches; l. 1½–2 in., very shortly stalked, oblong-oval, subcordate at base, obtuse, glabrous, thin, stip. small, lanceolate ; fl. small, in very long lax racemes, bracts minute ; cal.-segm. linear-lanceolate, acute, silky ; pet. slightly longer than cal.; pod not seen ('¾ in., oblong, cylindrical, shortly silky, with 15–20 seeds ').

Probably an introduction. The only specimens I have seen are the very poor C. P. ones. Thw. (l.c.) gives the locality 'Peradenia, rare.' Fl. pale yellow.

Also in Southern India.

9. **C. albida,** *Heyne in Roth. Nov. Pl.* 333 (1821).
Thw. Enum. 82. C. P. 269.
Fl. B. Ind. ii. 71.

A perennial herb or small under-shrub, with a short, woody base and very numerous ascending, slender branches 6 in.–2 ft. long, covered with short, adpressed hair; l. numerous, rather close, small, $\frac{1}{2}$–$\frac{3}{4}$ in., shortly stalked, linear-spathulate, acute at base, obtuse, truncate or retuse at apex, apiculate, glabrous, and minutely punctate above, silky with adpressed hair beneath, without stip.; fl. small, numerous, on slender ped., secund, in lax, terminal racemes, bracts minute, often on the cal.-tube; cal.-segm. $\frac{3}{8}$ in., the upper linear-oblong, very obtuse, the lower linear-lanceolate, acuminate, all very finely silky; pet. about as long as cal.; pod $\frac{1}{2}$ in., oblong-ovoid, not stalked, tipped with hooked base of style, glabrous, brown; seeds 6–12.

Lower montane zone; rather rare. Abundant in the Uva hill-country on the patanas; Maturata; Galagama. Fl. Jan., Feb.; bright yellow.

Throughout India and Malaya, also in Philippines and China.

10. **C. nana,** *Burm. Fl. Ind.* 156 (1768).
Moon Cat. 52. Thw. Enum. 82. C. P. 3301.
Fl. B. Ind. ii. 71. Burm. Fl. Ind. t. 48, f. 2.

A small herb, 6–12 in. high, with numerous short branches from the base of the stem, slender, prostrate, clothed with long hair; l. $\frac{1}{2}$–$\frac{5}{8}$ in., very shortly stalked, oval-oblong, obtuse at both ends, apiculate, hairy on both sides, minutely pitted above, without stip.; fl. small, on short, hairy ped., 2–6 in a crowded capitate terminal raceme; cal.-segm. shaggy with long hair, upper connate, lower linear, acuminate; pod $\frac{1}{4}$ in., scarcely exceeding cal., globular-ovoid, tipped with short, reflexed style, glabrous, rough, black; seeds 10–12.

Var. β, **umbellata.** *C. umbellata*, Wight, Thw. Enum. 82. C. P. 1276.

More robust, often 2 ft., much less branched below, but with several stout, stiff, ascending branches above which exceed the central one; fl. more numerous, 4–8 in a terminal umbel; seeds 6–8, rather larger.

Low country; rare. Katukanda, Negombo (Thwaites). Moon gives Colombo. Var. β, lower montane zone, 3000–4000 ft.; rather rare. Ramboda; Maturata; Passara. Fl. July, Sept., Feb.; yellow.

Also in Peninsular India.

11. **C. linifolia,** *L. f. Supp. Pl.* 322 (1781).
Thw. Enum. 82. C. P. 1277.
Fl. B. Ind. ii. 72.

Herbaceous, stems numerous, prostrate, spreading, slender, densely silky with adpressed hair; l. small, under $\frac{1}{2}$ in., on

short silky petioles, obovate-oblong, obtuse at both ends, glabrous above, silky beneath, without stip.; fl. small, numerous, on curved silky ped., arranged in erect, lax, terminal racemes; upper cal.-segm. connate, lower lanceolate, acuminate, all densely hairy; pod not seen ('small, as long as cal., ovoid-oblong, glabrous, black, 8–10- seeded').

Moist low country; very rare. The only specimens are the C. P. ones collected near Galle by Gardner, and they are imperfect and barely sufficient for identification.

Has a wide distribution throughout the E. Tropics.

12. **C. tecta,** *Heyne in Roth. Nov. Sp.* 334 (1821).
Trimen in Journ. Bot. xxvii. 162.
Fl. B. Ind. ii. 72 (not given for Ceylon).

Semi-shrubby at the base, stems 1 ft. or more, numerous, ascending, stiff and wiry, much branched, clothed with adpressed white hairs; l. small, $\frac{1}{2}$–$\frac{5}{8}$ in., shortly stalked, oval-oblong, obtuse at both ends, glabrous above, adpressed-hairy beneath, without stip.; fl. small, on curved hairy ped., in short, lax, terminal, racemes; cal. very hairy, upper segm. connate, lower much acuminate; pod rather over $\frac{1}{4}$ in., scarcely exceeding cal., oblong, cylindrical, not stalked, truncate at end, tipped with short style, glabrous, grey; seeds about 10.

Dry country; very rare. Collected in dry paddy-fields at Mineri, N.C. Prov., 1885. Fl. Sept.; pale yellow.

Also in S. India.

Perhaps scarcely more than a suffruticose state of *C. linifolia.*

13. **C. calycina,** *Schrank, Pl. Rar. Monac.* t. 12 (1819).
C. anthylloides, W. and A. Prod. 131 (non Lam.). Thw. Enum. 82. C. P. 526.
Fl. B. Ind. ii. 72.

An erect herb, 1–2 ft. or more, stem stout, with long, ascending branches, densely clothed with fulvous hair; l. very variable, nearly sessile, $1\frac{1}{2}$–6 in., from oblong-oval to linear, subacute at base, obtuse or acute and mucronate at apex, conduplicate when young, glabrous or sparingly hairy above, more or less hairy or shaggy beneath, stip. subulate, hairy; fl. large, on stout, nodding ped. (which become deflexed in fruit), 4–8 in lax terminal racemes, bracts in pairs immediately beneath each fl., large, lanceolate, acuminate, shaggy with long hair; cal. large, $\frac{3}{4}$–1 in., densely clothed outside with long, shaggy, fulvous hair, glabrous within, upper segm. shortly connate at base, obovate-oblong, obtuse, lower ones lanceolate-linear, acuminate; pet. equalling cal.; pod rather shorter than cal., not stalked, glabrous, dark brown; seeds about 20, pale brown, polished.

Montane region, descending a little into upper zone of low country, on patanas; common. Also at Nilgala, Uva. Fl. Jan., May–Sept.; yellow.

Throughout the E. Tropics and in Trop. Africa.

On the mountains at high elevations this is a dwarf plant, 6 in. high, with smaller fl. and small linear leaves.

14. **C. retusa,** *L. Sp. Pl.* 715 (1753). **Kaha-andana-hiriya,** *S.* **Kilukiluppai,** *T.*

Burm. Thes. 80. Herm. Mus. 20. Fl. Zeyl. n. 276. Moon Cat. 52. Thw. Enum. 81. C. P. 1274.

Fl. B. Ind. ii. 75. Bot. Reg. t. 253. Herm. Hort. Lugd.-Bat. t. 201.

A stout, semi-shrubby herb, with a few long, erect, striate branches, glabrous, or with adpressed pubescence; l. $1\frac{1}{2}$–$2\frac{1}{4}$ in., on very short, pubescent ped., narrowly obovate-oblong, tapering to base, very obtuse, often emarginate, glabrous above, finely pubescent beneath, stip. very small, subulate; fl. numerous, large, $1\frac{1}{4}$ in. on stout, curved, pubescent ped., closely placed in erect, terminal racemes 6–12 in. long, bracts shorter than ped.; cal. large, nearly glabrous, tube wide, campanulate, segm. triangular, acute; pet. much exserted; pod $1\frac{1}{2}$–$1\frac{3}{4}$ in., oblong, cylindrical, tapering at base to a short, broad stalk, tipped with slightly curved style-base, glabrous, purplish-green; seeds 15–20.

Var. β, **maritima,** *Trim. Syst. Cat. Ceyl. Pl.* 22.

Stems prostrate, densely pubescent; fl. more crowded in shorter racemes.

Low country, especially the dry region, up to 2000 ft., in waste places. Var. β on the seashore. Fl. Aug.–October; bright sulphur-yellow.

Found throughout the Tropics. The Fl. B. Ind. states this to be 'often cultivated,' and it has a tough fibre, but it is not grown in Ceylon on that account.

Hermann (Mus. 20) gives the name 'Jacberija' (Yakbériya) for this, and explains its meaning (see *C. laburnifolia*).

15. **C. verrucosa,** *L. Sp. Pl.* 715 (1753). **Nil-andana-hiriya,** *S.* **Kilukiluppai,** *T.*

Burm. Thes. 81. Herm. Mus. 65. Fl. Zeyl. n. 277. Moon Cat. 52. Thw. Enum. 81. C. P. 1273.

Fl. B. Ind. ii. 77. Burm. Thes. t. 34. Herm. Hort. Lugd.-Bat. t. 199. Wight, Ic. t. 200.

A large, much-branched herb, 2–3 ft., branches divaricate, irregularly quadrangular, finely puberulous, buds silky; l. $1\frac{1}{4}$–$1\frac{3}{4}$ in., shortly petiolate, spreading, ovate-rhomboid or ovate-deltoid, tapering to base, obtuse, undulate, with minute scattered pubescence on both surfaces, paler beneath, with prominent veins, somewhat bullate above, stip. rather large, foliaceous, $\frac{1}{2}$-ovate or $\frac{1}{2}$-cordate, acute, persistent; fl. rather large, $\frac{3}{4}$–1 in., on short, curved, downy ped., about 6–12 in.,

erect, leaf-opposed (apparently terminal), slightly curved racemes, bracts linear, acuminate, shorter than ped.; cal. minutely pubescent, segm. narrowly triangular, acuminate, the upper rather shorter; pod $1\frac{1}{4}$–$1\frac{1}{2}$ in., oblong, cylindrical, rather dilated at end, not stalked, hairy, nearly black; seeds about 12, yellow.

Low country; a common weed in open ground. Fl. all the year; bluish-purple, rarely white.

Found throughout the Tropics.

The white-flowered form is occasionally found; but I have never seen it with yellow fl. as given in 'Fl. B. Ind.'

16. **C. Walkeri,** *Arn. in Act. Acad. Nat. Cur.* xviii. 328 (1836.) [Plate XXVI.]

C. semperflorens, Vent., Thw. Enum. 81. C. P. 12.

Fl. B. Ind. ii. 78 (*C. semperflorens* var.).

A large perennial herb, often semi-shrubby at base, stems elongated, sarmentose, semi-scandent, with many spreading branches, slightly striate, glabrous or nearly so, young parts very finely pubescent; l. 2–4 in., on short, stout petioles, oval or lanceolate-oval, obtuse or acute, finely mucronate, glabrous above, usually puberulous beneath, thin, stip. variable, usually very small, either subulate, linear, or linear-lanceolate and very acute, or often falcate or semi-lunar, rarely foliaceous and larger; fl. rather large, 1 in., on rather slender, short ped., 4–10 in erect, loose, terminal racemes, with two minute bracts immediately beneath cal.; cal. very finely puberulous, tube broadly campanulate, segm. narrowly triangular, acuminate; pod 2–$2\frac{1}{2}$ in., tapering to distinct stalk at base, oblong, much inflated, especially at truncate apex, tipped by short, broad style-base, very finely puberulous; seeds 7–10.

Montane zone, especially at the higher elevations; rather common, scrambling over bushes like a climber. Fl. all the year, especially in December and January; bright golden yellow.

Endemic (?).

A very ornamental plant, well worth cultivation. Differs from *C. semperflorens*, Vent. (*C. Wallichiana*, W. and A.) of the Nilgiri Hills in its much less pubescent leaves and inflorescence, and its much smaller stipules, but possibly only a variety. *C. Wallichiana* is figured in Wight, Ic. t. 982. A dwarf variety occurs on the Horton Plains patanas, with short prostrate stems, small leaves, $\frac{1}{2}$–$\frac{3}{4}$ in. long, and smaller pods less inflated at the ends.

17. **C. juncea,** *L. Sp. Pl.* 714 (1753). **Hana,** *S.*

Burm. Thes. 82. Moon Cat. 52. Thw. Enum. 81. C. P. 1264.

Fl. B. Ind. ii. 79. Roxb. Cor. t. 193. Duthie Field-crops, t. 21.

An erect annual, 2–4 ft. or more, branches numerous, stiff,

ascending, slender, striate, finely pubescent; l. 1½–4 in., distant, on very short, thickened petioles, lanceolate-oblong or linear, acute at base, subacute, apiculate at apex, pubescent on both sides with adpressed silvery hair, stip. none or very minute; fl. large, 1½ in. or more, on stout, curved, pubescent ped., 3–8 in erect, lax, terminal racemes, bracts very small, 2 on cal.-tube; cal. nearly 1 in., shining with white hair, segm. very deep, lanceolate-linear, acuminate; pod 1–1¼ in., oblong, cylindrical, not stalked, tipped with short, nearly straight style-base, brown, densely covered with short, stiff white hair; seeds about 12.

Low country, principally in the dry region; rather common. Doubtfully native in the moist region. Fl. Aug.–Oct.; brilliant yellow.

Found in E. Tropics generally, but much cultivated.

This affords the San or Sun Hemp of commerce; it is grown in small quantity by the Sinhalese as about Chilaw, and by the Tamils at Jaffna. It is generally known here simply as 'Hemp.'

C. fulva, Roxb., is given for Ceylon in Fl. B. Ind. on the faith of specimens in Kew Herbarium (Gardner, 199, and G. Thomson from Kandy). They may have been cultivated in the Gardens.

18. **C. lunulata,** *Heyne in Wall. Cat.* n. 5378 (1828).
Thw. Enum. 81. C. P. 1270.
Fl. B. Ind. ii. 80. Wight, Ic. t. 480.

An erect, stiff herb, 1–2 ft. high, branched in upper part, stem and branches copiously clothed with soft, spreading white hairs (becoming brown when dried); l. closely placed, ½–2½ in., on very short petioles, oval or obovate-oblong, subacute at base, obtuse or rarely acute, apiculate, densely clothed with silky hair on both surfaces, stip. small, broadly oval, obtuse, amplexicaul, recurved, glabrous and shining (often absent); fl. rather small, ¾ in., numerous, on rather long, slender, hairy ped., arranged in drooping racemes which terminate divaricate or spreading branches, the whole forming a large paniculate inflor., bracts numerous, conspicuous, rotundate-cordate, acute, reflexed, hairy beneath, glabrous and shining (like the stip.) above, many on the lower part of the racemes often empty; cal. very deeply cut, segm. about ½ in., equal, linear, very acuminate, hairy outside, glabrous within; pet. slightly longer; pod small, not exceeding cal., ⅜ in., not stalked, oval-oblong, compressed, tipped by very long style-base, sparingly clothed with long hair; seed solitary.

Dry region; rare. Jaffna; Batticaloa; a few miles N. of Kurunegala; Kantalai. Fl. Aug.–Oct., Feb.–March; yellow.

Also in S. India.

Very unlike our other species.

19. **C. medicaginea,** *Lam. Encyc. Meth.* ii. 201 (1786).
Thw. Enum. 82. C. P. 1278.
Fl. B. Ind. ii. 81.

A small perennial herb, with a thick woody branched rootstock, and numerous, slender, filiform, spreading, much-branched, prostrate stems with scanty adpressed hair; l. very small, 3-foliolate, petiole $\frac{1}{12}$–$\frac{1}{6}$ in., stip. minute, acicular, lflts. a little longer than petiole, stalked, obovate or oval, acute, obtuse or truncate, with adpressed hair on both surfaces, paler beneath; fl. very small, on slender ped., 2–5 in leaf-opposed racemes; cal. with adpressed hairs, segm. oblong-linear, pet. about twice as long as cal.; pod pisiform, $\frac{1}{8}$ in., pointed or beaked; clothed with adpressed hair; seed solitary.

Var. β, **luxurians,** *Baker in Fl. B. Ind., l. c.*

Stem erect, 1–2 ft., more strongly pubescent; lflts. larger, $\frac{1}{2}$–$\frac{3}{4}$ in., glabrous above; fl. 6–10 in raceme; pods in a crowded head.

Dry region, chiefly on seacoast; rather rare (?). Near Jaffna, abundant; Trincomalie; Batticaloa. Var. β, Intermediate region. Haragama; Ella Pass, Uva. Fl. Sept.–Feb., dull yellow.
General in the E. Tropics; also in China and Afghanistan.

C. Willdenowiana, DC. was found once or twice about Colombo by W. Ferguson, but is not native (Thw. Enum. 441). It is C. P. 3853. The specimens are poor.

C. incana, L. A weed in the Botanic Garden, Peradeniya and neighbourhood for many years past, but no doubt introduced; Thw. Enum. 82. C. P. 1269. It seems to be the plant recorded in Moon Cat. 52 as *C. capensis*, and is becoming common in waste places. A general Tropical weed, probably originally American.

20. **C. striata,** *DC. Prod.* ii. 131 (1825).
Thw. Enum. 82, 410. C. P. 3810.
Fl. B. Ind. ii. 84. Bot. Mag. t. 2300.

A tall herb, 2–3 ft., stem stout, somewhat striate, with few long spreading branches, very minutely puberulous, young parts silky; l. large, 3-foliolate, petiole 2–3 in., stout, spreading, stiff, swollen at base, finely pubescent, stip. 0, lflts. longer than petiole, on short, swollen, pubescent stalks, broadly oval, acute at base, obtuse, often emarginate, apiculate, thin, glabrous above, minutely puberulous and glaucous beneath; fl. numerous, moderately large, on short deflexed ped., densely arranged in narrow erect spicate racemes 6–12 in. long and terminating stem and branches, bracts filiform, early deciduous; cal. minutely pilose, truncate at base, segm. equal, lanceolate-linear; pet. much exserted, standard narrow, strongly bent upwards; pod $1\frac{1}{2}$ in. or rather more, much deflexed, linear-

oblong, cylindrical, with a very short stalk, very minutely puberulous (apparently glabrous), pale cinnamon-brown; seeds about 25, dark brown.

Var. β, **acutifolia,** *Trim. Cat. Ceyl. Pl.* 22. Thw. Enum. 410. C. P. 3608.

Lflts. large, acute; pods longer, with more numerous seeds.

Low country in waste ground common; var. β, about Kandy.
Fl. Dec.–Feb., dull yellow, veined with purple.
Found throughout the Tropics.

21. **C. clavata,** *W. and A. Prod.* 194 (1834).
Fl. B. Ind. ii. 83.

A small semi-shrubby herb, branches with fine adpressed hair, l. 3-foliolate, lflts. small, $\frac{1}{2}$–$\frac{3}{4}$ in., obovate-oblong, tapering to base, often retuse at apex, glabrous above, slightly downy beneath, rather thick, pale green, stip. minute, setaceous, recurved, pubescent; fl. rather small, on short pubescent ped., in short erect racemes, bracts deflexed, setaceous; cal. pubescent, segm. narrowly triangular, acute; pod about 1 in. deflexed and somewhat curved, slightly widened at end, finely silky; 10–12-seeded.

Dry country; very rare, only found as yet near the Giant's Tank, Mannar. Fl. Feb.; yellow, not striped with red.
Also in S. India.

22. **C. laburnifolia,** *L. Sp. Pl.* 715 (1753). **Yak-bériya,** *S.*
Burm. Thes. 82. Fl. Zeyl. n. 278. Moon Cat. 52. Thw. Enum. 82. C. P. 367.
Fl. B. Ind. ii. 84. Burm. Thes. t. 35. Herm. Hort. Lugd.-Bat. t. 197.

A large, erect, semi-shrubby herb, 2–4 ft., stem and branches glabrous, young parts sparingly pubescent; l. 3-foliolate, petiole $1\frac{1}{2}$–$2\frac{1}{2}$ in., glabrous, stip. 0, lflts. on very short stalks, $1\frac{1}{2}$–$1\frac{3}{4}$ in., oval, acute at base, obtuse and mucronate at apex, thin, glabrous on both sides; fl. large, on ped. $\frac{1}{2}$–$\frac{3}{4}$ in. long, distantly arranged in very lax terminal racemes, bracts small, acicular; cal. glabrous, segm. narrowly triangular, acuminate; pet. much exserted, the keel very long-beaked; pod about 2 in. on a stiff slender stalk 1 in. long, oblong, cylindrical, tipped with hooked style-base, glabrous, brown; seeds 20 or more.

Low country, very common. Fl. Feb.–May; bright pale yellow, keel tinged with purple.
Also in S. India, Malaya, and the Philippines.
Readily known by the very long stalk to the pod. The name "Yak-bériya" is applied to all the species with the pods much inflated, and which therefore "pop" when squeezed.

23. **C. quinquefolia,** *L. Sp. Pl.* 716 (1753).
Thw. Enum. 82. C. P. 1272.
Fl. B. Ind. ii. 84. Rheede, Hort. Malab. ix. t. 28.

An erect annual herb, 1–2 ft., stem slightly branched, striate, glabrous; l. 3- or 5-foliolate, petiole short, $\frac{1}{4}$–$\frac{3}{4}$ in., glabrous, stip. very small, linear, lflts. 1–1$\frac{1}{2}$ in., subsessile, oblong-linear, tapering to base, obtuse, thin, glabrous, paler beneath; fl. moderate-sized, on erect slender ped., arranged in very lax terminal racemes of variable length, bracts small, lanceolate, acuminate; cal. glabrous, segm. narrowly triangular, acute; pet. not exserted, about twice as long as cal.; pod about 2 in., spreading, oblong-ovoid, tapering into short stalk, tipped with nearly straight style-base, glabrous, veiny; seeds 25 or more.

Dry region, in swampy places; rare. Bintenne; Chilaw; near Jaffna. Fl. Jan., Feb.; yellow.

Also in India, Burma, Malaya, and the Philippines.

4. **PAROCHETUS,** *Ham.*

A prostrate, creeping herb, l. 3-foliolate, fl. solitary, axillary; cal.-tube campanulate, upper segm. connate; wing and keel-pet. equal, shorter than standard; stam. diadelphous, anth. uniform; ov. sessile, style glabrous, stigma terminal; pod straight, many-seeded.—Monotypic.

P. communis, *Hamilt. in Don Prod. Fl. Nep.* 240 (1825).
Thw. Enum. 82. C. P. 2409.
Fl. B. Ind. ii. 86. Wight, Ic. t. 483 (*P. major*).

A creeping herb, stem very long, prostrate, slender and thread-like, slightly branched, glabrous or nearly so, rooting at the distant nodes; l. distant, 3-foliolate, petiole erect, 3–6 in. long, very slender, with scattered hairs, stip. ovate, acute, membranous, lflts. $\frac{1}{2}$–$\frac{3}{4}$ in., very shortly stalked, broadly obovate, cuneate at base, truncate and emarginate at apex, thin, glabrous above, slightly hairy and paler beneath; fl. solitary, $\frac{5}{8}$ in., peduncle axillary, about as long as petiole or longer, erect, slender, jointed about $\frac{3}{4}$ in. below the fl.; cal. $\frac{1}{4}$ in., slightly hairy, segm. acuminate; pod $\frac{3}{4}$ in., oblong-linear, tapering to apex, compressed, glabrous, dark brown; seeds about 15, dull, dark brown.

Montane zone, from 4000 ft. upwards, common in wet places.
Fl. Jan., Feb.; violet-blue.

Also in mountains of India, Burma, Java, and E. Trop. Africa.

A very pretty little plant; the leaves are remarkably like those of an *Oxalis*. The only native Trefoil.

Trifolium repens, L., the common white or Dutch clover, is completely established on roadsides about Nuwara Eliya; and *T. minus*, Sm., the small yellow Trefoil, and *T. arvense*, L., the Haresfoot Trefoil, also occur. No doubt all were introduced with grass seed.

Melilotus parviflora, Desf., is also met with as a casual, probably introduced with grain. There is a drawing of this in Hermann's collection, and it is n. 552 of the Fl. Zeylanica and the *Trifolium Melilotus indica* of Linnæus.

5. INDIGOFERA, *L.*

Herbs or shrubs, usually more or less clothed with adpressed silvery hairs attached by their centre; l. usually imparipinnate, rarely simple; fl. small, in axillary racemes, very rarely solitary; cal. small, tube more or less campanulate, segm. nearly equal or the lower ones rather longer, usually narrow; pet. nearly equal, keel-pet. connate, produced at base into a spur, not beaked; stam. diadelphous, anth. uniform; style short, stigma capitate; pod usually linear (rarely oblong, falcate or globose) cylindrical, usually many-seeded.—Sp. about 300; 40 in *Fl. B. Ind.*

Leaves simple; pod 1-seeded.	
Pod sickle-shaped, spiny	1. I. ECHINATA.
Pod globose, not spiny	2. I. LINIFOLIA.
L. imparipinnate; pod 2- or more-seeded.	
Pod 2-seeded	3. I. ENNEAPHYLLA.
Pod 6–12-seeded.	
Fl. solitary	4. I. ASPALATHOIDES.
Fl. in axillary racemes.	
Lfts. 3–13.	
Fl. few (2–8) in raceme.	
Lfts. 5	5. I. GLABRA.
Lfts. 7 or more.	
Branches nearly glabrous	6. I. TENUIFOLIA.
Branches covered with glandular hairs	7. I. VISCOSA.
Lflts. 3	8. I. TRIFOLIATA.
Fl. numerous in raceme.	
Lflts. 3 or 5.	
Pod not torulose.	
Pod straight, quadrangular	9. I. TRITA.
Pod curved, cylindrical	10. I. SUBULATA.
Pod torulose	11. I. PAUCIFOLIA.
Lflts. 7, 9, or 11.	
Pod not torulose, 8–12-seeded.	
Pod very hairy	12. I. HIRSUTA.
Pod nearly glabrous	13. I. TINCTORIA.
Pod torulose 3–6-seeded	14. I. CONSTRICTA.
Lflts. 15–23.	
Lflts. 15–19, thick; pod $1\frac{1}{4}$ in.	15. I. WIGHTII.
Lflts. 19–23, thin; pod 2 in.	16. I. GALEGOIDES.

1. **I. echinata,** *Willd. Sp. Pl.* iii. 1222 (1800).

Herm. Mus. 31. Burm. Thes. 113. Fl. Zeyl. n. 288. *Hedysarum nummularifolium*, L. Sp. Pl. 746. *Acanthonotus echinatus*, Benth., Thw. Enum. 83. C. P. 1453.

Fl. B. Ind. ii. 92. Wight, Ic. t. 316.

Annual, stems numerous, prostrate, spreading, 6–12 in. long, slender, 2-edged, branched, nearly glabrous; l. simple, $\frac{1}{2}$–$\frac{5}{8}$ in., very shortly stalked, obovate-rotund, very obtuse, apiculate, with a few small scattered white hairs on both sides, stip. linear, filiform; fl. very small, on very short ped., 3–8 together in axillary racemes slightly exceeding l., bracts acicular; cal.-segm. setaceous, bristly; pod $\frac{1}{4}$ in., compressed, semilunar, tipped with sharp style-base, the upper margin slightly curved, the lower very much so, and set with several rows of divaricate hooked spines, 1-seeded.

Dry region, in rocky and sandy places; common. Fl. Dec.–March; pink.

Also in Peninsular India and in W. Trop. Africa.

Linnæus' name is often erroneously referred to *Alyssicarpus nummularifolius*, DC. (as in Fl. B. Ind. ii. 158, following other writers).

2. **I. linifolia,** *Retz. Obs. Bot.* iv. 29 (1786).
Thw. Enum. 83. C. P. 3514.
Fl. B. Ind. ii. 92. Wight, Ic. t. 313.

Annual, stems very numerous, 1–2 ft. long, prostrate or ascending, much branched, slender, 2-edged, white with adpressed silvery hair; l. numerous, simple, $\frac{1}{2}$–$\frac{3}{4}$ in., linear, acute at both ends, strongly mucronate, silvery with adpressed hair on both surfaces, stip. setaceous; fl. very small, on short ped., 3–8 together in very numerous short axillary racemes; cal. very deeply cut, segm. setaceous; pod very small, size of a mustard-seed, globular, apiculate, white and glistening with adpressed hair, 1-seeded.

Dry country; rare. Kurundu-oya, on the banks of the Mahaweli River; Kantalai. Fl. May, August; very pale pink.

Throughout the E. Tropics, also in Afghanistan and Abyssinia.

3. **I. enneaphylla,** *L. Mant.* ii. 571 (1771). **Cheppunerinchi,** *T.*
Moon Cat. 54. Thw. Enum. 83. C. P. 2775.
Fl. B. Ind. ii. 94. Wight, Ic. t. 403 (bad).

Annual or perennial, root-stock often woody; stems numerous, trailing, prostrate but not rooting, much branched, sparingly strigose with white adpressed hair; l. small, $\frac{1}{2}$–$\frac{3}{4}$ in., imparipinnate, stip. rather large, lanceolate, acuminate, lflts. 7–9 (rarely 11), nearly sessile, alternate, minute, narrowly obovate, cuneate at base, retuse and apiculate at apex, stiff; fl. very small, nearly sessile, 10–20 crowded in a short close spicate head, peduncle short, bracts lanceolate, acuminate, scarious; cal. set with long stiff white hairs, segm. very long, setaceous; pod very small, $\frac{1}{8}$ in., ovoid-oblong, with a sharp apiculus, more or less clothed with white adpressed hair, 2-seeded with a partition between the seeds.

Dry districts and on the seashore; common. Fl. all the year; bright red.

Throughout the E. Tropics and in Angola, W. Trop. Africa.

Found often in the hottest and most barren places, where it becomes curiously compact and stunted.

4. **I. aspalathoides,** *Vahl, ex DC. Prod.* ii. 231 (1825). **Chivanarvempu,** *T.* **Rat-kohomba,** *S.*

Herm. Mus. 34. Burm. Thes. 89. Fl. Zeyl. n. 271. *Aspalathus indicus*, L. Sp. Pl. 712; Moon Cat. 52. Thw. Enum. 83. C. P. 1455.

Fl. B. Ind. ii. 94. Wight, Ic. t. 332 (not good).

A low shrub, much branched, the branches divaricately spreading, rigid, the young twigs snowy white with a felt of copious short hair which is deciduous and shows the branches glabrous, shining, and purple; l. minute, sessile, crowded on the twigs, but soon caducous, sessile, digitate, lflts. 1–5, usually 3, about $\frac{1}{10}$ in. long, sessile, linear, often involute, with a few large, white, adpressed hairs, rather fleshy; fl. solitary, $\frac{1}{4}$ in., on slender axillary ped. longer than l.; cal.-segm. linear; pod about $\frac{1}{2}$ in., narrowly linear, apiculate, straight, turgid, nearly glabrous, pale brown; seeds about 8 with partitions between them.

Dry region; rare. Jaffna, very abundant on sandy flats; Batticaloa. Fl. Nov.–Feb.; dark pink.

Also in the Carnatic plains of S. India.

Used for making brooms at Jaffna. It is also a favourite medicine among the Tamils. The S. name given is that of the drug as sold in the bazaars. Hermann (Mus. 34) gives it, and probably obtained his specimens from that source, as it grows nowhere in the S. of the island.

Very different in habit from all our other species; the lflts. look like simple leaves in fascicles.

5. **I. glabra,** *L. Sp. Pl.* 751 (1753).

Herm. Mus. 34. Burm. Thes. 39. Fl. Zeyl. n. 274. *I. pentaphylla*, L., Thw. Enum. 411. C. P. 3524.

Fl. B. Ind. ii. 95 (*I. pentaphylla*). Wight, Ic. t. 385.

Annual, 1–3 ft., with numerous, very slender, ascending, glabrous branches; l. imparipinnate, rachis $\frac{3}{4}$–1 in., stip. setaceous, persistent, lflts. usually 5 (2 pair and end one), very shortly stalked, $\frac{1}{2}$–$\frac{3}{4}$ in., obovate-oval, obtuse, thin, slightly hairy; fl. small, on slender ped., 2–4 in. short axillary racemes; cal.-segm. long, setaceous; pod about $\frac{3}{4}$ in., narrowly linear, straight, cylindrical, apiculate, glabrous; seeds about 12 with partitions between.

Moist low country; very rare. I have seen, besides Hermann's, only the C. P. specimens, collected at Colombo by Ferguson in 1859, which are very imperfect. Fl. red.

Occurs throughout India and in Trop. Africa.

Of Linnæus' duplicate names *I. glabra* has 21 years' priority over *I. pentaphylla*, but neither name is very appropriate.

6. **I. tenuifolia,** *Rottl. ex W. and A. Prod.* 200 (1834).
Thw. Enum. 83. C. P. 1462.
Fl. B. Ind. ii. 95.

Annual, 6–18 in. high, with numerous spreading or ascending, slender, slightly strigose branches ; l. imparipinnate, rachis $\frac{1}{2}$–$\frac{5}{8}$ in., strigose, stip. small, setaceous, lflts. usually 9 (4 pair and end one), very shortly stalked, obovate-linear, with few coarse adpressed hairs on both sides, stipel minute, setaceous ; fl. small, shortly stalked, 3–8 in axillary racemes usually longer than l., cal.-segm. setaceous ; pod nearly 1 in., linear, compressed, straight, with scattered adpressed hair, rather torulose, about 10-seeded.

Dry region ; rare. Trincomalie ; Bintenne ; Bibile, Uva. Fl. Jan. ; red.
Also in S. India.

7. **I. viscosa,** *Lam. Encycl.* iii. 247 (1789).
Thw. Enum. 83. C. P. 1459.
Fl. B. Ind. ii. 95. Wight, Ic. 404 (not good).

Annual, but often semi-woody below, 1–3 ft., branches numerous, spreading, densely clothed with gland-tipped hairs, so as to be very viscous to the touch ; l. imparipinnate, rachis about 1 in., slender, very viscous, with glandular hair, stip. filiform-setaceous, lflts. 7–13 (3–6 pair and end one), usually 11, obovate-oval, obtuse, apiculate, nearly sessile, finely hairy above, with larger adpressed hairs beneath ; fl. small, very shortly stalked, 3–6 in glandular racemes rather shorter than l. ; cal.-segm. filiform, setaceous ; pod $\frac{1}{2}$–$\frac{3}{4}$ in., linear, straight, cylindrical, torulose, apiculate, clothed with both adpressed white hairs and copious gland-tipped ones ; seeds 10–12.

Dry region ; very common in open places. Fl. May–Sept. ; pink.
Throughout the Tropics of Asia, Africa, and Australia.

8. **I. trifoliata,** *L. Amœn. Acad.* iv. 327 (1759).
Thw. Enum. 83. C. P. 3592.
Fl. B. Ind. ii. 96. Wight, Ic. t. 314.

Herbaceous, 1–2 ft., branches few, slender, elongated, with scattered, adpressed white hairs ; l. 3-foliolate, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., slender, stip. very small, setaceous, lflts. $\frac{1}{2}$–1 in., shortly stalked, narrowly obovate-oval, tapering to base, obtuse, apiculate, nearly glabrous above, glaucous with white adpressed hair and with scattered glandular dots beneath ; fl. small, on very short, curved ped., 3–6 crowded in very short sessile racemes ; cal.-segm. lanceolate, acuminate ; pod $\frac{1}{2}$–$\frac{3}{4}$ in., deflexed, linear, straight, somewhat quadrangular, with 4 narrow longitudinal wings, one on either side of each suture, not torulose, with a few scattered white hairs, 6–8-seeded.

Dry or intermediate regions; rare. Mineri; near Badulla. Fl. Dec.–March; dark pink.

Throughout India, and in Java, China, N. Australia.

There are specimens in Hb. Perad. without locality which are probably *I. vestita*, Baker, of S. India.

9. **I. trita,** *L. f. Supp. Pl.* 335 (1781). **Wal-awari,** *S.*
Thw. Enum. 83. C. P. 1463.
Fl. B. Ind. ii. 96. Wight, Ic. tt. 315, 386.

A low, coarse under-shrub, 1–2 ft. high, branches numerous, rigid, divaricate, hoary with adpressed white hair; l. 3-foliolate, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stip. small, setaceous, lflts. narrowly obovate-oblong, the end one stalked, the lat. ones nearly sessile, usually slightly emarginate, dark green and glabrous above, whitish and finely hairy beneath, stipels minute; fl. rather small, $\frac{3}{8}$ in., numerous, nearly sessile, in spicate racemes shorter than l.; cal.-segm. narrow, acuminate; wing- and keel-pet. very long, the former emarginate at apex; pod 1–1$\frac{1}{4}$ in., linear, divaricate, rigid, straight, quadrangular, spine-pointed, not torulose, purplish-silvery, with adpressed hairs; seeds 8.

Dry region; rather common in damp waste ground. Trincomalie; Batticaloa; several places bet. Anuradhapura and Trincomalie; Atakalan Korale. Fl. May; salmon-red.

In most countries of Trop. Asia, N. Australia.

The fl. at the top of the racemes do not produce pods, and the end of the rachis in fruit becomes rigid and spine-pointed.

10. **I. subulata,** *Poir. Encycl. Meth. Supp.* iii. 150 (1813).
I. flaccida, Koen., Thw. Enum. 83. C. P. 1460.
Fl. B. Ind. ii. 96. Wight, Ic. t. 387 (*I. flaccida*).

Perennial, with very long, slender, sub-scandent stems, branches numerous, ascending or spreading, striate, nearly glabrous, when young with white adpressed hair; l. imparipinnate, rachis 1–2 in., slender, hoary, stip. filiform, lflts. 5 (2 pair and end one), stalked, readily disarticulating, oval, obtuse, apiculate, hairy on both sides, paler beneath; fl. small, on short, strongly curved ped., numerous, in very long-stalked, slender, spicate racemes, exceeding the l.; cal.-segm. setaceous; pod 1$\frac{1}{2}$–1$\frac{3}{4}$ in., linear, slender, deflexed at base, curved outwards, and divaricate, sharp-pointed, subquadrangular, nearly glabrous, not torulose; seeds 8–12.

Dry region, scrambling over bushes; rather rare. Trincomalie; Haragama; Anuradhapura. Fl. December–Feb.; pale purplish-red.

Found in S. India and in Trop. Africa and America.

Easily known by its straggling sub-scandent habit. The racemes greatly elongate after flowering, frequently reaching 9 in., the pods being mostly found in the lower half.

11. **I. paucifolia,** *Del. Descr. Egypte*, 251 (1812). **Nanti,** *T.*
Thw. Enum. 83. C. P. 1454.
Fl. B. Ind. ii. 97. Wight, Ic. t. 331.

A small shrub, 1–3 ft., with numerous stout, woody, ascending branches, more or less densely hoary with small, white adpressed hair, young parts white, silky; l. imparipinnate, rachis $\frac{1}{4}$–$\frac{1}{2}$ in., stip. lanceolate, acuminate, lflts. 3–5, rarely 7, alternate, very shortly stalked, $\frac{5}{8}$–1 in., narrowly oblong-lanceolate, shortly acuminate, slightly hairy above, white with dense pubescence beneath, conduplicate when young, terminal one largest; fl. small, numerous, on short, curved ped., racemes spicate, rather close, longer than l.; cal.-segm. lanceolate, cuspidate; pods numerous on whole length of raceme, deflexed, $\frac{1}{2}$–$\frac{3}{4}$ in., slightly curved outwards, apiculate, torulose, hoary; seeds about 6.

Dry and desert regions; rather common. Jaffna, abundant; Aripo; Kalpitiya and Karativu I., abundant; Matalan, N. Prov. (Nevill). Fl. Feb., March, August; red.

Also occurs in Trop. Africa, Arabia, Beluchistan, Sind, and in Java.

Mr. Nevill gives me as the Tamil name of this 'Kuttukarasamatti.'

I. parviflora, Heyne. A scrap in the Peradeniya collection collected by Ferguson in 1865 at Colombo may be this species, but is too imperfect for certain identification.

12. **I. hirsuta,** *L. Sp. Pl.* 751 (1753).

Herm. Mus. 10. Burm. Thes. 37. Fl. Zeyl. n. 272. Moon Cat. 54. Thw. Enum. 83. C. P. 1456.

Fl. B. Ind. ii. 98. Burm. Thes. t. 14.

Annual, 1–3 ft., erect, slightly branched, branches horizontal, covered (as is whole plant) with spreading reddish hair; l. imparipinnate, rachis 1$\frac{1}{2}$–2 in., stip. $\frac{3}{8}$ in., filiform, conspicuous, lflts. 7 (3 pair and end one), shortly stalked, $\frac{3}{4}$–1 in., oblong-oval, very hairy on both sides, especially beneath; fl. numerous, on short curved ped., racemes long-stalked, rather dense, greatly exceeding l.; cal.-segm. long, filiform, very hairy; pods $\frac{3}{4}$ in., numerous, deflexed, overlapping, oblong-linear, somewhat quadrangular, apiculate, densely clothed with spreading hair; seeds 8.

Dry and intermediate regions; very common. Fl. March–Aug.; bright pink.

In nearly all Tropical countries.

Hermann's name for this is 'Ghasundupjali' (Gas-undupiyali).

13. * **I. tinctoria,** *L. Sp. Pl.* 751 (1753). **Nil-awari,** *S.*

Herm. Mus. 32. Burm. Thes. 69. Fl. Zeyl. n. 273. Moon Cat. 54. Thw. Enum. 411. C. P. 3591.

Fl. B. Ind. ii. 99. Wight, Ic. t. 365. Bentl. and Trim. Med. Pl. t. 72.

A low shrub, 2–4 ft., with numerous virgate, slightly angular branches, more or less covered with white adpressed hairs; l. imparipinnate, rachis 1$\frac{1}{2}$–2 in., adpressed-pilose, stip.

small, linear-cuspidate, lflts. 7–11 (3–5 pair and end one), shortly stalked with minute stipels, about ¾ in., obovate-oblong, acute at base, rounded, often retuse, apiculate, glabrous above, silvery-silky beneath, bright green, but drying a blackish-grey, readily disarticulating; fl. small, on short, slender ped., in erect, rather lax, tapering spicate racemes, bracts small, cuspidate; cal. very shallow, silvery-hairy, segm. lanceolate, acute; pod 1–1¼ in., linear, straight or slightly curved, cylindrical, strongly apiculate, thickened at both sutures, nearly glabrous, slightly or not at all constricted between the seeds; seeds 8–12.

Low country, by roadsides and waste places; rather common, especially in the dry region, but very doubtfully indigenous. Fl. all the year; pink, standard green outside.

Found also in India and Tropical Africa, but scarcely known as a wild plant anywhere, unless in West Trop. Africa.

This is the Indigo plant, so largely cultivated in India. Here there is no cultivation, but the natives of Jaffna use the leaves of the wild plant in obtaining a black dye for cloth.

I. Anil, L., is occasionally met with as a roadside weed. It is another indigo-producing species, and is generally believed to be of American origin.

14. **I. constricta,** *Trim. Cat. Ceylon Pl.* 23 (1885).
I. flaccida, var. β, *constricta*, Thw. Enum. 411. C. P. 3811.
Fl. B. Ind. ii. 99 (note under (*I. tinctoria*).

A small erect shrub, with few cylindrical branches, silvery with adpressed hair; l. imparipinnate, rachis about 2 in., stip. short, stiffly setaceous, lflts. 9, shortly stalked, about ¾ in., oval or oblong-oval, acute at base, obtusely apiculate, finely hairy on both sides, especially beneath, easily falling; fl. numerous, racemes about as long as l.; cal. silky, tube campanulate, segm. short, triangular, acute; pod about 1¼ in., linear, slightly curved, somewhat 4-angled, pointed, much constricted between the seeds, sparingly silky; seeds 3–6, larger than in *I. tinctoria*.

Montane zone; very rare. Étaṇwelle, Matale East (Thwaites). Fl. June; pet. not seen.

Also in Peninsular India (N. Canara, Talbot n. 320 in Herb. Calcutta).

15. **I. Wightii,** *Grah. in Wall. Cat.* n. 5488 (1828).
I. inamœna, Thw. Enum. 83. C. P. 3513.
Fl. B. Ind. ii. 99.

A small shrub, with numerous spreading, furrowed, grey-silvery branches, young parts densely covered with adpressed silvery hair; l. imparipinnate, rachis 2–3 in., silvery, stip. very small, cuspidate, lflts. 15–19 (7–9 pair and end one), small,

$\frac{3}{8}$ in., shortly stalked, lanceolate-oblong, acute at base, obtuse, with a strongly curved mucro at apex, coriaceous, densely covered with adpressed white hair on both sides; fl. on slender ped., in nearly sessile crowded racemes much shorter than l.; cal.-segm. lanceolate-linear; pet. very hairy outside; pod $1\frac{1}{4}$ in., stout, linear, cylindrical, mucronate, hairy, not torulose; seeds, 10–12.

Low country very rare. Kalupahane near Haldummulla, at about 2000 ft. (Thwaites). Fl. April, red.
Also in S. India.

16. **I. galegoides,** *DC. Prod.* ii. 225 (1825).
Arn. Pug. 11. Thw. Enum. C. P. 1461.
Fl. B. Ind. ii. 100.

A tall shrub or little tree, twigs angular, glabrous, young parts silvery-pubescent; l. imparipinnate, rachis 3–$4\frac{1}{2}$ in., channelled on upper side, pubescent, stip. filiform, lflts. 19–23 (9–11 pair and end one), distinctly stalked, oblong, acute at base, obtuse, finely mucronate, silky on both sides, paler beneath, thin, stipels minute; fl. on short ped., in dense, erect, spicate racemes; cal. hairy, segm. short, triangular, acute; pod 2 in., linear, straight, with a long beak, nearly glabrous; seeds 8–10, very truncate at ends.

Moist low country; rather rare. Colombo (Ferguson); Welipenna, Pasdun Korale; Kaduganawa; Matale (Gardner). Fl. April–August; pale pink.
Also in E. Bengal, Malaya, and S. China.
Often planted for ornament.

6. PSORALEA, *L.*

Annual herbs, dotted with small dark glands; l. simple; fl. in short, dense, axillary racemes; cal. cut about $\frac{1}{2}$ way down, lowest segm. longest, keel-pet. obtuse, not beaked; stam. diadelphous, but the upper one often partially connate with rest, anth. nearly uniform; style long; pod small, indehiscent, 1-seeded.—Sp. about 100; 2 in *Fl. B. Ind.*

P. corylifolia, *L. Sp. Pl.* 764 (1753). **Bodi,** *S.*
Moon Cat. 55. Arn. Pug. 11. Thw. Enum. 84. C. P. 1443.
Fl. B. Ind. ii. 103. Bot. Mag. t. 665.

Annual, 1–3 ft., stem erect, with scattered hairs or nearly glabrous, dotted with glands, slightly branched; l. simple, on erect petioles $\frac{1}{2}$–1 in. long, $1\frac{1}{2}$–$2\frac{1}{2}$ in., roundish or broadly ovate, rounded at base, acute or subacute, irregularly repand-dentate, sparingly hairy on both sides, copiously sprinkled

with black, glandular dots, veins prominent beneath, stip. triangular, acuminate; fl. small, on short ped., crowded in a dense spicate raceme ¾ in. long, terminating a stiff, erect, axillary peduncle about 2 in. long, bracts membranous, acute, gland-dotted; cal. hairy, gland-dotted, segm. obtuse; pod $\frac{1}{10}$ in., enclosed in cal. and scarcely exceeding it, broadly ovoid, glabrous, black, indehiscent.

Dry region; rather rare. Anuradhapura; Nalande; Delft I. (Gardner); Mannar. Fl. Feb., Aug., Nov.; purple.
Throughout Peninsular India.
Arnott (l. c.) states that Ceylon specimens are sometimes 3-foliolate.

Ceylon has no species of *Millettia*, of which 24 species are included in Fl. B. Ind.

7. **MUNDULEA,** *DC.*

Small tree; l. imparipinnate; fl. large, in terminal racemes; cal. deeply campanulate, segm. short, two upper connate; pet. about equal, standard with long claw, wing-pet. coherent with keel near the base; stam. monadelphous, anth. uniform; style long, curved; pod linear, flat, scarcely dehiscent, few-seeded.—Sp. 3; 1 in *Fl. B. Ind.*

M. suberosa, *Benth. Pl. Jungh.* iii. 248 (1854).
Tephrosia suberosa, DC. Thw. Enum. 84. C. P. 1486.
Fl. B. Ind. ii. 110. Wight, Ill. t. 82.

A small slender tree or erect shrub, 10–15 ft. high, with pale corky bark, young twigs densely pilose-velvety; l. numerous, rachis 4–6 in., densely silky-pubescent, stip. small, linear, lflts. 13–23 (6–11 pair and end one), the lower ones often alternate, shortly stalked, ¾–1½ in., narrowly ovate-lanceolate, obtuse, apiculate, glabrous and bright green above, silky and silvery beneath; fl. large, on pilose ped. ½ in. long, in rather dense terminal racemes; cal. silky, segm. broadly triangular, acute; pet. over ¾ in., standard silky outside; pod 2–3½ in., linear, straight, rostrate, strongly compressed, densely velvety, with short, golden-brown hair, thickened at sutures; seeds 2–7, about ⅛ in., yellowish-brown.

Rocky hills in the dry region; rare. Dambulla Hill, abundant; rocks near Habarane. Fl. March, Sept., Nov.; bright pinkish-violet.
Also in S. India, Trop. Africa, Madagascar.
It is just possible that this pretty shrub may have been originally introduced to its few Ceylon localities. It is sometimes cultivated in gardens.

8. **TEPHROSIA,** *Pers.*

Perennial herbs or low shrubs, l. imparipinnate, with setaceous (rarely spinous) stip. and oblong lflts., fl. in leaf-opposed racemes or few axillary; cal. campanulate, segm. nearly equal, acuminate; keel-pet. not beaked; stam. diadelphous, anth. uniform; style much curved, filiform or flattened; pod linear, flat, dehiscent, many-seeded, without septa between the seeds.—Sp. 100; 10 in *Fl. B. Ind.*

Stipules spinous . . . . 1. T. SPINOSA.
Stipules not spinous.
  Pod slightly pilose or silky.
    Lflts. unequal.
      Fl. axillary . . . . 2. T. SENTICOSA.
      Fl. in racemes . . . . 3. T. TINCTORIA.
    Lflts. nearly equal.
      Seeds 5 or 6 . . . . 4. T. PURPUREA.
      Seeds 11–14 . . . . 5. T. MAXIMA.
  Pod densely hairy.
    Pod about 2 in., nearly straight . . . . 6. T. HOOKERIANA.
    Pod. $1\frac{1}{4}$ in., distinctly falcate . . . . 7. T. VILLOSA.

1. **T. spinosa,** *Pers. Syn. Pl.* ii. 330 (1807).
Thw. Enum. 411.
Fl. B. Ind. ii. 112. Wight, Ic. t. 372.

A small spreading shrub with rigid divaricate branches, silvery-grey with adpressed hair; l. small, rachis $\frac{1}{4}$–$\frac{3}{4}$ in., pubescent, stip. sharply spinous, persistent, becoming woody, lflts. 2–4 pair and end one, very shortly stalked, nearly equal, obovate-oblong, strongly mucronate, silky on both surfaces, more or less conduplicate; fl. rather small, on slender ped., solitary or 2 or 3 in axils of l.; cal. hairy, segm. sharply acuminate; pod 1–$1\frac{1}{4}$ in., linear, slightly falcate, pendulous, mucronate, thinly silky, 5–7-seeded.

Dry region; very rare. Near Giant's Tank, Mannar District, 1890. The locality given in Thw. Enum. is 'North of the Island, Mr. W. Ferguson;' and Mr. F. informed me that the specimens were sent to him from Aripo in 1859 by the late Dr. Charsley. Fl. Jan.–Feb.; pink.

Also in S. India and Java.

A common bazaar drug under the Tamil name of 'Mukavallivér.'

2. **T. senticosa.** *Pers. Syn. Pl.* ii. 330 (1807).
Herm. Mus. 12 and 14. Fl. Zeyl. n. 303. *Cracca senticosa*, L. Sp. Pl. 752. W. and A. Prod. 212. Trim. in Journ. Linn. Soc. xxiv. 148.
Fl. B. Ind. ii. 112. Wight, Ic. t. 370.

A low shrub with numerous divaricate hoary branches; lflts. 1–3 pair and an end one (which is much the largest), 1–2 in., obovate-oblong, emarginate, nearly glabrous above,

clothed with adpressed soft white hair beneath, stip. subulate; fl. shortly stalked, solitary or 2 in the axils; pod 1½–2 in., spreading, linear, much curved, sparingly pilose, 6–8-seeded.

Very rare. I have seen no specimens but those in Hermann's Herbarium; the pods of these are very sparingly pilose, but there are no flowers. The plant is perhaps only a cultivated state of *T. spinosa;* some of Hermann's specimens have 7–9 lflts.

Also in S. India.

The above description mainly from Roxburgh (*Galega pentaphylla*, Fl. Ind. iii. 384).

3. **T. tinctoria,** *Pers. Syn. Pl.* ii. 329 (1807). **Alu-pila,** *S.*
Herm. Mus. 34. Fl. Zeyl. n. 302. *Cracca tinctoria*, L. Sp. Pl. 752. *Galega tinctoria*, L., Moon Cat. 55. Thw. Enum. 84. C. P. 1449.
Fl. B. Ind. ii. 111. Wight, Ic. t. 388.

Perennial, somewhat shrubby below, 1½–3 ft., stem and ascending branches stiff, slightly angled, more or less clothed with yellow or brownish pubescence; l.-rachis 1–2 in., pubescent, stip. small, triangular, acuminate, lflts. 7–11 (3–5 pair and an end one), unequal, decreasing in size towards base of l. very variable in width, obtuse at both ends, often retuse at apex, mucronate, glabrous above, more or less densely silvery-silky beneath, lat. veins numerous, parallel, conspicuous; fl. rather small, on slender, short, hairy ped., in short, erect racemes, on stiff hairy peduncles exceeding the l., bracts setaceous, hairy; cal.-segm. long, setaceous, hairy; pod 2–2½ in., linear, very slightly curved upwards at end, apiculate, more or less densely covered with soft silky hair, seeds 7–10, distant.

Var β, **pulcherrima,** *Baker in Fl. B. Ind., l. c.*

Lflts. 1–5, very unequal, the terminal one much the longest (3 in. or more) and often the only one present, more densely silky beneath and with lat. veins more prominent, stip. larger; pods more thickly velvety.

Upper zone of moist low country and lower mountain zone, rather common; abundant in the patanas of Uva. Var. β, Matale. Fl. Jan., Feb.; bright pink.

Also in Peninsular India.

Very variable in foliage; when the terminal lflt. is not larger than the rest, it is *T. intermedia*, Grah. An inferior Indigo is obtained from this, and is or was in use by the Siṇhalese (see Herm. Mus. l. c.)

4. **T. purpurea,** *Pers. Syn. Pl.* ii. 329 (1807). **Pila,** *S.* **Kolinchi,** *T.*
Burm. Thes. 77. Fl. Zeyl. n. 301. *Cracca purpurea*, L. Sp. Plant. 752. *Galega purpurea*, L., Moon Cat. 55. Thw. Enum. 84. C. P. 1445.
Fl. B. Ind. ii. 112. Burm. Thes. t. 32.

A perennial herb, 1–2 ft. high, with numerous wide-spreading, glabrous or sparingly pilose branches; l. numerous, rachis 1½–3 in., slender, flexuose, channelled above, pilose, stip. setaceous, lflts. 5–10 pair and end one, on pilose stalks, equal, narrowly cuneate-oblong, tapering to base, obtuse or retuse, mucronate, glabrous above, finely adpressed-silky beneath; fl. numerous, rather small, on slender ped., 2 or 3 together in small, lax, narrow, erect, terminal racemes; cal. thinly silky, segm. long, acuminate; pod 1½–1¾ in., linear, slightly curved, mucronate, very thinly hairy, 5–6-seeded.

Low country in both moist and dry regions, a very common weed. Fl. July, Nov., Dec.; purplish-pink.

Found throughout the Tropics.

There is a form with very small flowers, which seem to be that figured by Burman.

A common village medicine for children.

5. **T. maxima,** *Pers. Syn. Pl.* ii. 329 (1807). [PLATE XXVII.]
Burm. Thes. 228. Fl. Zeyl. n. 300. *Cracca maxima*, L. Sp. Pl. 752. Thw. Enum. 84. *Galega maxima*, L., Moon Cat. 55. C. P. 1444.
Fl. B. Ind. ii. 113 (*T. purpurea*, var.). Burm. Thes. t. 108, f. 2 (bad).

Perennial, often prostrate, with many long, slender branches set with rather long spreading hair; l. distant, rachis 2½–6 in., channelled above, with more or less long spreading hair, stip. cuspidate, deflexed or spreading, rigid, conspicuous, lflts. stalked, in 4–6 pair and an end one, nearly equal, narrowly obovate-oblong, usually strongly emarginate, mucronate, nearly glabrous on both sides, lat. veins prominent beneath; fl. large, few, on slender ped., in lax, long-stalked, apparently terminal (? really axillary) racemes exceeding the l., cal. pubescent, segm. narrow, acuminate; pet. ¾ in.; pod about 2½ in., narrowly linear, slightly falcate, beaked, scantily pubescent or nearly glabrous; seeds 11–14.

Dry region in sandy ground liable to be overflowed; rather common. Jaffna; Mineri; Kantalai. Fl. March–Aug.; bright pale pink.

Also in S. India.

A very pretty plant with large rose-coloured flowers. I cannot agree with Baker, in Fl. B. Ind., in making this a variety of *T. purpurea.*

The fl. are sometimes solitary in the leaf axils. The stip. are developed before the l., and are very conspicuous in the buds.

6. **T. Hookeriana,** *W. and A. Prod.* 212 (1834).
T. hirta, Thw. Enum. 84. C. P. 2776.
Fl. B. Ind. ii. 113.

Perennial, erect, with ascending pubescent branches; l. large, rachis about 3 in., pubescent, stip. linear, filiform, lflts. in 7–9 pair and an end one, 1–1½ in., shortly stalked, oblong-

linear, obtuse, retuse, mucronate, glabrous above, white and shining with adpressed hair beneath; fl. rather large, racemes very long, lax, erect, spicate, terminal; cal. very hairy, upper segm. broader; style flattened; pod $1\frac{3}{4}$–2 in., linear, slightly falcate, weakly mucronate, very densely clothed with copious fulvous hair; seeds 6–10.

Moist low country; very rare. The C. P. plants are labelled 'Colombo (Macrae);' and Thw. also gives 'Hantane (Gardner).' Fl. purplish-white.
Also in India and Malacca.

7. **T. villosa,** *Pers. Syn. Pl.* ii. 329 (1807). **Bu-pila,** *S.*
Burm. Thes. 78. Fl. Zeyl. n. 299. *Cracca villosa,* L. Sp. Pl. 752. *Galega villosa,* L., Moon Cat. 55. Thw. Enum. 84. C. P. 1447, 1446.
Fl. B. Ind. ii. 113. Burm. Thes. t. 33.

Perennial, semi-shrubby below, branches numerous, spreading, white with adpressed hair; l. numerous, rachis 1–2 in., silky, stip. rigid, sometimes almost spinous, spreading, lflts. in 5–9 pair and an end one, distinctly stalked, narrowly obovate-oblong, obtuse, mucronate, nearly glabrous above, finely silky beneath; fl. rather small, on hairy ped., in clusters of 2 or 3, racemes lax, terminal, on short peduncles, bracts linear; cal. densely covered with long soft hair, teeth setaceous, plumose; standard hairy on the back; pod about $1\frac{1}{4}$ in., broadly linear, distinctly falcate, bluntly apiculate, very thickly covered with dense spreading brownish hair; seeds 6–8.

Dry region; very common. Fl. all the year; pink, rarely white.
Also in Peninsular India, Trop. Africa, and Mauritius.
C. P. 1446 (from Jaffna) has the young leaves and inflorescence much more densely clothed with silvery hair; it is var. *argentea*, Thw. Enum. (*T. argentea*, Pers.). Burman's figure (l. c.) represents a white-flowered variety.

9. SESBANIA, *Pers.*

Annual or perennial, semi-woody, l. long, abruptly pinnate with numerous pairs of lflts., fl. in axillary racemes; cal. campanulate, segm. shallow, equal; pet. equal, long-clawed, keel obtuse, not beaked; stam. diadelphous, anth. uniform; style curved upwards, glabrous; pod very long and narrow, dehiscent, with distinct partitions between the numerous seeds.—Sp. 20; 4 in *Fl. B. Ind.*

Lflts. 20–30; pods pendulous, twisted . . . . 1. S. ÆGYPTIACA.
Lflts. 40–100; pods spreading or erect, not twisted . 2. S. ACULEATA.

1. * **S. ægyptiaca,** *Pers. Syn. Pl.* ii. 316 (1807). **Chiṭṭakatti,** *T.*
Moon Cat. 53. Thw. Enum. 84. C. P. 1512.
Fl. B. Ind. ii. 114. Wight, Ic. t. 32.

A weedy tree-like herb 6–10 ft. high, with numerous spreading branches, nearly glabrous, without prickles, young parts silky; l. numerous, rachis 2½–4 in., slightly pilose, without prickles, furrowed above, swollen at base, stip. filiform, membranous, falling early; lflts. in 10–15 pair, very shortly stalked, ½–¾ in., oblong-linear, obtuse, apiculate, glabrous or nearly so, rather glaucous; fl. few, rather large, on very slender ped., in very lax, slender, pendulous, axillary, stalked racemes; cal. glabrous, segm. very shallow, acute; pod 8–9 in., pendulous, very narrowly linear, sharply beaked, usually somewhat twisted, weak, slightly torulose, seeds 30 or more, greenish-grey.

Dry country; rare. Habarane (Gardner); Trincomalie (Glenie). Doubtfully native, but often seen in gardens. Fl. Nov., Dec., June; pale yellow, the standard dotted on the back with purple.

Throughout the Tropics, but often cultivated.

2. **S. aculeata,** *Pers. Syn. Pl.* ii. 316 (1807).
Burm. Thes. 93. Herm. Mus. 55. Fl. Zeyl. n. 298, var. β (in part). *Æschynomene Sesban*, L. Sp. Pl. 714 (part). Moon Cat. 53. Thw. Enum. 84. C. P. 1513.
Fl. B. Ind. ii. 114. Burm. Thes. t. 41 (poor).

A semi-woody annual, 1–3 ft. high, with numerous, more or less prickly, glabrous, ascending branches; l. ascending, rachis very long, 6–10 in., branch-like, stout, cylindrical, more or less set beneath with small hooked prickles, glabrous, stip. membranous, acuminate, soon falling, lflts. very numerous, 20–50 pair, shortly stalked, ¼–⅝ in., linear or oblong-linear, obtuse, mucronate, glabrous; fl. as in the last but rather smaller; pod 6–9 in., spreading or erect, narrowly linear, slightly falcate, beaked, stiff not twisted, glabrous, slightly torulose.

Var. β, **sericea,** *Benth. in Thw. Enum.* 441. C. P. 3850.

Branches, rachis and lflts. permanently silky beneath; racemes with shorter peduncles.

Low country especially in dry region; rather common. Var. β, Colombo. Often a bad weed in paddy fields. Fl. Jan., July; yellow, standard with red dots on the back.

Throughout the E. Tropics.

An unarmed variety is common in paddy fields with shorter erect straight pods always under 4 in. long and solitary and sessile in the axils, which is probably *Æ. uliginosa*, Roxb., or perhaps *Æ. procumbens*, Roxb.

Under his *Æ. Sesban*, Linnæus doubtless included also *S. ægyptiaca*.

S. grandiflora, Pers. (*Agati*, Desv.) is often seen in native gardens, its large white or red flowers being very conspicuous. It is called *Katuru-murunga* in S., *Akatti* in T., and is figured in Bedd. Fl. Sylv. t. 86. The leaves and flowers are eaten.

10. **ZORNIA,** *Gmel.*

Annual, l. compound, lflts. 2, dotted; fl. in long lax spikes, each enclosed in a pair of large flat bracts; cal. minute, paleaceous, upper segm. connate; pet. much exserted; stam. monadelphous, anth. dimorphic; pod jointed, easily separable into flattened, circular, muriculate, indehiscent, 1-seeded joints. —Sp. 10; 1 in *Fl. B. Ind.*

Z. diphylla, *Pers. Syn. Pl.* ii. 318 (1807).
Herm. Mus. 18. Burm. Thes. 114. Fl. Zeyl. n. 291. *Hedysarum diphyllum*, L. Sp. Pl. 747. *Z. angustifolia*, Sm., Thw. Enum. 84. C. P. 3598.
Fl. B. Ind. ii. 147. Rheede, Hort. Malab. ix. tt. 82, 83.

Annual, with many prostrate or ascending, glabrous or puberulous, wiry branches, 6–12 in. long; l. small, rachis $\frac{1}{4}$–$\frac{1}{2}$ in., stip. large, lanceolate, acuminate, produced below into an acuminate appendage, lflts. 2 (a single pair) very shortly stalked, linear-lanceolate or lanceolate, acute, often unequal-sided, glabrous, rigid, dotted with black glands beneath; fl. small, sessile, distant, each enclosed within a pair of ovate, acute, flat, reticulate-veined, leaf-like, persistent bracts, often ciliate, dotted like the l., arranged in stiff, erect, very lax axillary spikes; pod either quite enclosed between or slightly exceeding bracts, about $\frac{1}{2}$ in., composed of 2–5 compressed indehiscent joints set with numerous short straight spines.

Var. β, **conjugata,** *Trim. Hedysarum conjugatum*, Willd. Sp. Pl. iii. 1178. *Z. zeylanensis*, Pers. Syn. Pl. ii. 213. Moon Cat. 54. *Z. conjugata*, Sm., Thw. Enum. 85. Burm. Thes. t. 50, f. 1. C. P. 3600.

Lflts. $\frac{1}{2}$ in., ovate; pods larger, twice as long as bracts.

Var. γ, **Walkeri,** *Baker. Z. Walkeri*, Arn. Pug. 12; Thw. Enum. 85. C. P. 3599.

Lflts. $\frac{1}{2}$–$\frac{3}{4}$ in.; pods scarcely longer than bracts, reticulate-veined, without spines.

Low country, especially dry region; common. Var. β, Colombo. Var. γ, Colombo; Jaffna; Badulla; Galagama; Hewahette. Fl. all the year; yellow.

Found throughout the Tropics. Var. γ is endemic, and has perhaps good claims to be kept up as a species.

Herm. gives 'Mahaswænna' (Maha-aswenna) as the S. name.

[*Geissaspis cristata*, W. and A., is given for Ceylon in Fl. B. Ind. ii. 141, but I know of no specimens from here in any Herb.]

11. STYLOSANTHES, *Sw.*

A dwarf, rigid under-shrub, l. pinnately 3-foliolate, with large stip., fl. few, in dense heads; cal. tubular, the lowest segm. longest; keel-pet. slightly beaked; stam. monadelphous, dimorphic; style long, straight; pod of 1 or 2 flattened, wrinkled, indehiscent, 1-seeded joints.—Sp. 15; 1 in *Fl. B. Ind.*

S. mucronata, *Willd. Sp. Pl.* iii. 1166 (1800). **Wal-nanu,** *S.* Herm. Mus. 42. Burm. Thes. 226. Fl. Zeyl. n. 553. *Hedysarum hamatum.* L. Sp. Pl. ed. 2, 1057. *Arachis fruticosa,* Retz. Obs. v. 26. Moon Cat. 54. Thw. Enum. 84. C. P. 1451.

Fl. B. Ind. ii. 148. Burm. Thes. t. 106, f. 2. Bedd. Ic. t. 294.

A much-branched, dwarf, woody perennial, branches stiff, wiry, ascending, hairy; l. distant or crowded, rachis $\frac{1}{4}$–$\frac{3}{8}$ in., stip. large, membranous, adnate to rachis for half its length and forming a sheath round stem and terminating in 2 acicular spreading sharply spiny teeth, lflts. 3, shortly stalked, $\frac{3}{8}$–$\frac{1}{2}$ in., the terminal rather the largest, lanceolate, strongly mucronate, rigid, glabrous above, silky on the prominent veins below and marked with groups of conspicuous black dots; fl. rather small, few, sessile in axils of leaf-like stipulate bracts and forming small close terminal heads or spikes; cal. membranous, splitting into laciniæ in fruit; pod very short, concealed by persistent bracts, tipped by long curved beak, joints pubescent, with raised veins.

Dry and desert region; common in the most arid places. Fl. March, August; yellow.

Also in Peninsular India, and in Malay Islands and Trop. and S. Africa.

I doubt the Siṇhalese name above given.

12. SMITHIA,* *Aiton.*

Annual or perennial herbs, l. abruptly pinnate, the rachis ending in a bristle, with large stip., fl. axillary, racemose, or paniculate, with 2 persistent scarious bracts adpressed to cal.; cal. deeply divided into 2 lips which are either entire or lobed; stam. in 2 bundles of 5 each, anth. uniform; pod very small, enclosed in persistent cal., of 2–6, easily separable, seed-like, 1-seeded joints.—Sp. about 30; 12 in *Fl. B. Ind.*

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* Commemorates Sir James Edward Smith, the purchaser of Linnæus' collections and founder and first President of the Linnean Society. Died 1828.

Cal. rigid, the lips entire, acute.
Fl. in small axillary racemes . . . . . 1. S. SENSITIVA.
Fl. solitary or 2, in axils . . . . . . 2. S. GEMINIFLORA.
Cal. membranous, the lips lobed; fl. in panicles . 3. S. BLANDA.

1. **S. sensitiva,** *Ait. Hort. Kew.* iii. 496 (1789).
C. P. 3946.
Fl. B. Ind. ii. 148 (not given for Ceylon). Ait. Hort. Kew. t. 13.

Annual with very slender much-branched, glabrous stems, 1–1½ ft. long; l. small, rachis under ½ in., set with bristly hairs, stip. lanceolate, acute, lflts. 3–6 pair, oblong-linear, obtuse, bristle-pointed, glabrous above, with rather long bristles on margin and midrib beneath; fl. small, on slender ped., 2–6 crowded at ends of small, stalked, erect, axillary racemes rather longer than l.; cal. striate, somewhat bristly, the lips equal, acute, entire; joints of pod 4–6, papillose, pale brown.

Low country in intermediate region; very rare. Kaluganga, Lagalla (Beckett); wet places near Lenadore. Fl. Feb.; bright yellow.

Also in India, Java, China, Trop. Africa, Madagascar.

The leaves are excessively sensitive.

2. **S. conferta,** *Sm. in Rees' Cyclop.* xxxiii. (1816).
Thw. Enum. 85. C. P. 2777.
Fl. B. Ind. ii. 149. (*S. geminiflora*, Roth. var.)

Annual, 2–4 ft., branches long, virgate, straggling, smooth, with very long internodes below, l. small, rachis ¾–¼ in., bristly, stip. very large, scarious, brownish-red, lanceolate, acute, with a long deflexed acuminate or lacerate auricle at base, lflts. 4–8 pair, ¼–½ in., oblong, obtuse, mucronate, glabrous above, strongly ciliate on margin and midrib beneath, fl. rather large, conspicuous, with 2 scarious bracts close beneath cal., solitary or 2, on slender ped., from axils of upper l. which are crowded at ends of branches, so as to form a congested head; cal. scarious, rigid, lips entire, acute; pod very small, joints 3 or 4, minute, wrinkled.

Moist low country up to 3000 ft.; in wet places, rather common. Pasdun Korale; Hantane; Maturata; Dikwelle; Ella. Fl. Jan., July, September; pale yellow.

Also in India, Java, and Trop. Australia.

This is doubtless the *S. sensitiva* of Moon Cat. 54. The leaves become deflexed and the leaflets close up quickly after gathering, or on being struck.

3. **S. blanda,** *Wall. Cat.* n. 5669 (1828).
S. paniculata, Arn. Pug. 12. Thw. Enum. 85. C. P. 58.
Fl. B. Ind. ii. 151. Wight, Ic. t. 986 (?).

A perennial herb, 1–2 ft., erect or ascending, stems slightly branched, usually hispid, more rarely glabrous; l. distant

rachis $\frac{1}{2}$–1 in., generally hispid, stip. as in the last, lflts. 2–6 pair, overlapping, nearly sessile, oval-oblong, obtuse, mucronate, glabrous on both sides; fl. rather large, on slender hispid ped., in large, lax, spreading, terminal panicles, bracts beneath cal. short, obtuse; cal. membranous, hispid, the upper lip broad, with 2 rounded lobes, the lower narrower with 3 segm., the central one acute; joints of pod 1–4, nearly globular, reticulated.

Montane zone, 4–7000 ft., on patanas, common.

Fl. September, December; bright yellow, standard with two red spots at base.

Also in the mountains of India.

This is a variable plant, but I cannot distinguish any well-marked constant varieties. Wight's figure above quoted is very unlike our plant.

The lflts. are sensitive, and close up on being struck or gathered.

13. ÆSCHYNOMENE, *L.*

Large herbs; l. pinnate with very numerous lflts., fl. few, in axillary clusters, with 2 bracts below each; cal. deeply 2-lipped, lips nearly entire or lobed; pet. soon falling, keel not beaked; stam. in 2 bundles of 5 each, anth. uniform; style curved upwards; pod long-stalked, linear, compressed, shortly beaked, composed of 6–9 readily separable 1-seeded indehiscent joints.—Sp. 30; 2 in *Fl. B. Ind.*

Cal. glabrous; joints of pod smooth . . . 1. Æ. INDICA.
Cal. hispid; joints of pod strongly muriculate . 2. Æ. ASPERA.

1. **Æ. indica,** *L. Sp. Pl.* 713 (1753). **Diya-siyambala,** *S.*
Herm. Mus. 40. Burm. Thes. 120. Fl. Zeyl. in 551. *Æ. pumila,* L. Sp. Pl. ed. 2, 1061. Moon Cat. 54. Thw. Enum. 85. C. P. 1515.
Fl. B. Ind. ii. 151. Wight, Ic. t. 405.

Annual, 1–2 ft., stem erect with ascending, cylindrical, slender, glabrous branches; l. very shortly stalked, rachis stout $1\frac{1}{2}$–4 in., glabrous, stip. linear-lanceolate, acute, auricled at base, lflts. very numerous, 40–70, alternate, sessile, small, $\frac{1}{10}$–$\frac{1}{2}$ in., set obliquely on the rachis and overlapping, linear, unequal-sided, obtuse, apiculate, glabrous, thin, the upper ones much the smallest; fl. few, on slender glandular ped., small, 1–3, on axillary peduncles (or branches) much shorter than l.; cal. glabrous, lips very shortly toothed; pod 1–$1\frac{1}{2}$ in., narrow, slightly curved, glabrous or very slightly muriculate, 7–9-jointed.

Dry region, in wet places, especially near tanks, common. Fl. July–Nov., yellow.

Throughout the Tropics of the Old World and in Japan.

Variable. The stem, petioles, and pedicels are often covered with stalked glands. *Æ. pumila*, L. is a form with acute leaflets, and more hispid pods. Mr. Nevill sends from Puttalam a dwarf prostrate state, no doubt from dry ground.

The base of the stem is often swollen and pith-like, but to no such extent as in *Æ. aspera.*

2. **Æ. aspera,** *L. Sp. Pl.* 713 (1753). **Maha-diya-siyambala,** *S.* **Attuneddi,** *T.*

Herm. Mus. 24, 41. Burm. Thes. 119. Fl. Zeyl. n. 298. Moon Cat. 54. Thw. Enum. 85. C. P. 1514.

Fl. B. Ind. ii. 152. Wight, Ic. t. 299.

Perennial, stem very stout, often horizontal below and floating, then erect 2–4 ft., glabrous, scarcely branched, usually with a hollow pith-cavity, structure very light and spongy; l. large, rachis 4–6 in., stout, glabrous, stip. over ½ in., linear, acuminate with a rounded membranous ciliate auricle at base, lflts. as in the last but still more numerous; fl. rather large, on hispid ped., 2–6 in axillary corymbose panicles much shorter than l., bracts ovate, hispid; cal. hispid, upper lip rounded, lower 3-fid; pet. hairy outside; pod 3–4 in., over ¼ in wide, nearly straight, woody, glabrous, 6- or 7-jointed, each joint with a group of sharp asperities in the centre.

Dry region, in tanks and paddy fields, common. Fl. December; yellow.

Also in India, Malaya, and Trop. Africa.

This is remarkable for the light, spongy character of the tissue of the stem (which in large plants attains 3 in. in diameter), whence it is often called the 'pith-plant' by the English. It is the 'Shola' of Bengal, and from slices of the stem the well-known pith hats are made. A manufacture of similar hats was started in 1885 in the jail at Hambantota, in the neighbourhood of which place the plant is plentiful.

14. ORMOCARPUM, *Beauv.*

Shrubs, l. imparipinnate; fl. few, in axillary racemes; cal.-tube campanulate, upper segm. broader than lower; keel-pet. much incurved, not beaked; stam. in 2 bundles of 5 each, anth. uniform; style much curved upwards; pod long-stalked, composed of few narrow, indehiscent, oval-oblong joints readily disarticulating.—Sp. 6; 1 in *Fl. B. Ind.*

O. sennoides, *DC. Prod.* ii. 315 (1825).

Hedysarum sennoides, Willd., Moon Cat. 54. Thw. Enum. 85. C. P. 1438.

Fl. B. Ind. ii. 152. Wight, Ic. t. 297.

A small, rather straggling, branching shrub, with smooth pale bark and slender twigs; l. spreading, rachis 1¼–2½ in., usually rough with minute prickles, stip. small, triangular,

sharply acuminate, striate, persistent, lflts. 9–15, usually alternate, shortly stalked, oval-oblong, rounded at both ends, apiculate, glabrous, pale beneath; fl. few, rather small, nodding on slender, hispid ped., about 3 in small hispid and glandular racemes, much shorter than l.; cal. somewhat hispid-glandular, or nearly glabrous, segm. acute; pod 1–2 in., long-stalked, moniliform, beaked, much contracted between the oblong-ovoid joints, joints 1–4 longitudinally striate, muriculate and viscous with glands.

Dry region, rather common. Anuradhapura; Kekirawa; Tissamaharama; Bibile. Moon's locality is Matale; there are specimens from him in Herb. Mus. Brit., collected in 1819. Fl. Dec.–April; dull yellow.

Also in Peninsular India, Siam, Philippines, Polynesia, and Trop. Africa.

A form with a very prickly pod was collected at Vigitapura, near Kalawewa Tank.

15. **ELEIOTIS,** *DC.*

Annual, l. 1-foliolate; fl. minute, in long axillary racemes; cal.-segm. long, setaceous; keel-pet. adherent to wing-pet.; stam. diadelphous, anth. uniform; pod of a single boat-shaped membranous joint, 1-seeded.—Monotypic.

E. sororia, *DC. Prod.* ii. 348 (1825).
Thw. Enum. 412. C. P. 3765.
Fl. B. Ind. ii. 153. Burm. Fl. Ind. t. 50, f. 2 (*Glycine monophylla*).

A prostrate annual, stems long, slender, triquetrous, glabrous, very slightly winged at the angles; l. simple, lflt. small, rounded, much broader than long, deeply emarginate, glabrous above, hairy beneath, with two minute stipellæ at base; petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stip. triangular, acute, striate, membranous; fl. shortly stalked, in numerous very long, filiform, pubescent, trailing axillary racemes; pod very small, of 1 joint $\frac{1}{4}$ in. long, compressed, boat-shaped, glabrous, veined.

Moist low country; very rare. Only collected near Colombo by Ferguson in 1862; but probably overlooked elsewhere.

Also in Peninsular India.

I have but little material for description.

16. **PYCNOSPORA,** *R. Br.*

Perennial, semi-shrubby, l. pinnately 3-foliolate; fl. small, in terminal racemes; cal. very deeply cut, upper segm. connate, lower longer; keel-pet. obtuse; stam. diadelphous, anth.

uniform; pod ovoid, not jointed, several-seeded, without partitions.—Monotypic.

P. hedysaroides, *Br. in W. and A. Prod.* 197 (1834).
Flemingia polysperma, Moon Cat. 54 (?). *P. nervosa*, W. and A., Thw. Enum. 92. C. P. 279.
Fl. B. Ind. ii. 153.

Perennial, with a woody base and numerous slender prostrate or ascending stems with adpressed pubescence; l.-rachis about ½ in., stip. lanceolate, long-acuminate, hairy, deciduous, lflts. shortly stalked, with filiform stipels, ¼–1 in., the terminal the largest, obovate-oval, obtuse at base, rounded at apex, pubescent on both sides, especially beneath, which is paler and with prominent veins; fl. small, on slender ped., in lax, narrow, erect, terminal racemes, bracts ovate, strongly acuminate, densely silky, falling before buds open; cal. hairy, segm. acuminate; pod small, ¼–⅜ in., ovoid, straight along dorsal side, turgid, apiculate, glabrous, veined, dark brown; 6–10-seeded.

Low country and up to 4000 ft.; rather common, abundant in the lower hills of Uva; absent in much of the dry region. Fl. Feb.–May, pale purplish.
Also in India, China, Philippines, and North Australia.

17. PSEUDARTHRIA, *W. and A.*

Herbaceous, l. pinnately 3-foliolate; fl. in elongated racemose panicles; cal. minute, upper segm. shorter, subconnate; keel-pet. obtuse; stam. diadelphous, anth. uniform; pod linear-oblong, compressed, indehiscent, 4–6-seeded, without partitions, not jointed.—Sp. 5; 1 in *Fl. B. Ind.*

Scarcely distinct from *Desmodium.*

P. viscida, *W. and A. Prod.* 209 (1834). **Gas-gonika,** *S.*
Herm. Mus. 36. Burm. Thes. 187. Fl. Zeyl. n. 295. *Hedysarum viscidum*, L. Sp. Pl. 747. *Glycine viscida*, Willd., Moon Cat. 53; Thw. Enum. 87. C. P. 1432.
Fl. B. Ind. ii. 154. Burm. Thes. t. 84, f. 1. Wight, Ic. t. 286.

A large perennial (?) herb, 2–4 ft., erect, with numerous more or less hairy branches; l. long-stalked, rachis 2–4 in., pubescent or hairy, stip. linear, lflts, on short stalks, stipellate, the terminal 2–3½ in., the lateral 1–2½ in. and somewhat unequal-sided, all rhomboid-oval, acute, pubescent above, densely white-silky beneath; fl. small, very numerous, on slender, spreading ped., arranged in fascicles on numerous lax, elongated and axillary racemes or panicles, bracts acicular, shorter

than ped.; cal. hairy, segm. acute; pod linear-oblong, about $\frac{3}{4}$ in., truncate, apiculate, strongly compressed, flat, viscous-pubescent, 4–6-seeded, slightly indented along the edges between the seeds.

Moist low country to 3000 ft., a common weed. Fl. Jan., Feb.; bright pink.

Also in Peninsular India and Timor.

The flat viscid pods attach themselves to clothing or animals, and are thus transferred to other places.

18. **URARIA,** *Desv.*

Semi-shrubby perennials, l. imparipinnate, sometimes 1-foliolate; fl. numerous, in long terminal racemes; cal. very deeply cleft, segm. nearly equal or lower longer; keel-pet. obtuse; stam. diadelphous, anth. uniform; pod composed of 2–7 very small, indehiscent, 1-seeded joints, usually folded face to face on one another.—Sp. 8; all in *Fl. B. Ind.*

Leaflets 5–7, linear	1. U. PICTA.
Leaflets 1–3, broadly oval	2. U. HAMOSA.

1. **U. picta,** *Desv. Journ. Bot.* iii. 123 (1813).
Thw. Enum. 85. C. P. 1437.
Fl. B. Ind. ii. 155.

A small erect, semi-shrubby perennial, stem slightly branched, harshly pubescent; l. rather large, rachis 3–5 in., pubescent, stip. $\frac{1}{2}$–$\frac{3}{4}$ in., triangular, acuminate, striate, lflts. 5–7 (2 or 3 pair and end one), very shortly stalked, with filiform stipels, $2\frac{1}{2}$–4 in., linear, rounded at base, slightly tapering to acute apex, glabrous above, and usually mottled with white along both sides of midrib, scabrous-pubescent, paler and with prominent veins beneath; fl. small, on hispid ped., arranged in fascicles in a dense, erect, spicate raceme 6–9 in. long, bracts large, lanceolate, acuminate, striate, strongly ciliate, completely concealing the buds but soon falling; cal.-segm. plumose with long hair, lower acuminate; pod of 2–4 ovoid, turgid, white, polished, seed-like joints.

Dry region in grassy places; rather rare. Mineri and Topare Tanks; Kalawewa; Batticaloa district; near Bibile. Fl. Dec., March.

Also in India, Malay Is., Philippines, and Trop. Africa.

In fruit the pedicels are stiffly curved upwards and inwards, so that the pods are in contact with the rachis, and the persistent calyx-segm. become rigid.

[*U. crinita,* Desv. is given for Ceylon in Fl. B. Ind. It is only here under cultivation in gardens.]

2. **U. hamosa,** *Wall. Cat.* n. 5681 B. (1828).
Thw. Enum. 85. C. P. 3590.
Fl. B. Ind. ii. 156. Wight, Ic. t. 284.

A small semi-shrubby perennial with slightly pubescent branches; l.-rachis about 1 in., hairy, stip. acuminate, hairy, lflts. 1 or 3, the terminal 2–3½ in., the lateral (when present) much smaller, all stipellate, shortly stalked, broadly oblong-oval or subrotund, nearly glabrous above, paler and silky with prominent veins beneath; fl. small, on shaggy ped., arranged in very lax, elongated, spicate, terminal racemes, bracts ovate, acuminate, woolly; cal. pubescent, lower segm. not elongated; pod of 4–7 flattened, glabrous, slightly wrinkled, greyish-brown joints.

Low country; rare. Badulla; Nilgala; Gampola. Fl. Feb., March. Also in India, Burma, and the Malay Archipelago.

19. ALYSSICARPUS, *Neck.*

Annual, semi-woody at base with many wiry diffuse stems; l. 1-foliolate, thick, with large scarious stip., fl. in leaf-opposed or terminal racemes or spikes; cal. deeply cleft with narrow glumaceous segm.; keel-pet. obtuse, adnate to wings; stam. diadelphous, anth. uniform, pod turgid, cylindrical, usually moniliform, composed of few indehiscent 1-seeded joints.—Sp. 15; 9 in *Fl. B. Ind.*

Pod pubescent, moniliform . . . . . 1. A. MONILIFER.
Pod glabrous, or very nearly so.
  Pod not at all moniliform . . . . . 2. A. VAGINALIS.
  Pod more or less moniliform.
    Joints quite even . . . . . . 3. A. BUPLEURIFOLIUS.
    Joints reticulate-veined . . . . . 4. A. LONGIFOLIUS.
    Joints transversely ribbed . . . . . 5. A. RUGOSUS.

1. **A. monilifer,** *DC. Prod.* ii. 353 (1825).
Hedysarum moniliferum, L., Moon Cat. 54. Thw. Enum. 412. C. P. 3613.
Fl. B. Ind. ii. 157 (not given for Ceylon). Burm. Fl. Ind. t. 52, f. 3.

Stems numerous, slender, prostrate, much branched, sparingly clothed with spreading deciduous bristly hair, l. small, ⅜–⅝ in., on petiole about half as long, broadly oval, often cordate at base, very obtuse, glabrous above, paler, with prominent venation and slightly bristly on the veins beneath, stip. long, membranous, very acute; fl. shortly stalked, about 4–10 in rather close, erect, shortly pedunculate racemes; cal. with scattered bristles, segm. very narrow; pod. erect, monili-

form, with 2–6 turgid, globose joints, pubescent, not reticulate, cal. a little longer than lowest joint.

Low country; rare. Colombo (Ferguson); Trincomalie (Glenie); Maturata (Moon).

Also in India, Burma, and Abyssinia.

I have not met with this.

2. **A. vaginalis,** *DC. Prod.* ii. 353 (1825). **Aswenna,** *S.*

Burm. Thes. 104. Fl. Zeyl. n. 287. *Hedysarum vaginale,* L. Sp. Pl. 746; Moon Cat. 54. Thw. Enum. 87. C. P. 1428.

Fl. B. Ind. ii. 158. Burm. Thes. t. 49, f. 1.

Stems numerous, long, 2–4 ft., ascending, branched, wiry, glabrous, often rooting at base; l. variable, ½–2 in., on petioles about a third as long, varying from linear-lanceolate to broadly oval, often cordate at base, acute, apiculate, glabrous above, whitish with adpressed hair and reticulately veined beneath, stip. scarious, as long as petiole, closely pressed to stem, very acuminate straw-coloured, persistent; fl. very shortly stalked, clustered, racemes short on short peduncles; cal. slightly pubescent, segm. setaceous, with a few long bristly hairs; pod ½–¾ in. of 4–7 joints, erect, cylindrical not moniliform, apiculate, glabrous or nearly so, reticulate-venose, cal. nearly as long as two lowest joints.

Low country; common, especially in the dry region. Fl. Dec., January; pinkish violet.

Throughout the Tropics of the Old World.

The habit is just that of *Polygonum aviculare* of Europe. A common form with short rounded leaves is *A. nummularifolius,* DC., to which has been erroneously referred *Hedysarum nummularifolium,* L. (for which see *Indigofera echinata*). Another form collected at Nilgala, in Uva, has very rigid linear leaves and a more shrubby habit.

3. **A. bupleurifolius,** *DC. Prod.* ii. 352 (1825). **Kutiraivali,** *T.*

Thw. Enum. 87. C. P. 1427.

Fl. B. Ind. ii. 158. Roxb. Cor. Pl. t. 194.

Stems long, 1–3 ft., stiff, wiry, nearly glabrous with long internodes; l. linear but varying to oblong or even broadly oval below, very shortly stalked, acute, rigid, glabrous on both sides, stip. thin, chaffy, soon falling; fl. on very short ped., usually 2 together, distantly placed, racemes very long, erect, rigid, lax, spicate; cal.-segm. lanceolate, acute, ciliate, much imbricated; pod shortly stalked, ¼–⅜ in., of 3–6 readily separating joints, very slightly moniliform, strongly apiculate, glabrous, without reticulations, cal. as long as lowest joint.

Dry country; rare (?). Batticaloa; Bintenne; Mannar. Fl. Dec., Jan.; pink.

Throughout the E. Tropics, also in China and Mauritius.

In the Mannar District the seeds are eaten as a grain, and have the same name as *Panicum frumentaceum.*

4. **A. longifolius,** *W. and A. Prod.* 233 (1834).
Thw. Enum. 412. C. P. 3814.
Fl. B. Ind. ii. 158 (not given for Ceylon). Wight, Ic. t. 251.

Stems stout, ascending, 4–5 ft., glabrous; l. on short petioles, 1½–2 in., lanceolate-oblong, slightly cordate at base, obtuse, glabrous on both sides, stip. as long as petiole; fl. numerous, on short hairy erect ped., racemes rather dense, very long, spicate, bracts very conspicuous, concealing buds, ovate, acuminate, silky, falling before fl. open; cal. hairy, segm. oblong, acute, ciliate; pod. ⅜–½ in., very shortly stalked, terete-compressed, strongly apiculate, of 3–6 joints, slightly moniliform, puberulous, reticulate-veined, cal. as long as 2 lowest joints.

Low country; very rare (?). Near Colombo (Ferguson).
Throughout Peninsular India.

5. **A. rugosus,** *DC. Prod.* ii. 353 (1825).
A. scariosus, Grah., Thw. Enum. 88. C. P. 3589.
Fl. B. Ind. ii. 159.

Branches erect or prostrate, rather stout, more or less covered with spreading bristly hairs; l. small, on short hairy petioles, ½–1 in., varying from broadly oval to oblong or oblong-linear, somewhat cordate at base, obtuse, apiculate, glabrous above, slightly bristly beneath, stip. longer than petioles, acute, glabrous; fl. nearly sessile, densely crowded in short nearly sessile heads or spikes, bracts large, chaffy, acuminate, strongly ciliate, persistent; cal.-segm. lanceolate, acute, strongly ciliate; pod short, stalked, of 2–5 joints, moniliform, turgid, glabrous, strongly transversely ribbed, nearly all included in cal.

Var. β, **Heyneanus,** *Baker. A. Heyneanus*, Wight, Thw. Enum. 88.

Much larger, more hairy, especially l. beneath; fl. in longer spikes.

Low country, in the dry region; rare. Mineri Tank; Mantai, &c., in the Mannar Dist. abundant. Var. β, Colombo (Ferguson). Fl. Feb., March; bright dark pink, with the standard yellow, conspicuous.

Also throughout the Tropics of the Old World, and in W. Indies and S. Africa.

Our plant as usually met with is very dwarf and stunted, and is var. 2 *styracifolius* of Fl. B. Ind.

20. DESMODIUM, *Desv.*

Small shrubs or perennial herbs, l. 3- or 1-foliolate, lflts. shortly stalked, stipellate, fl. small, usually in lax axillary or

terminal racemes or panicles; cal. campanulate or cup-shaped, segm. usually nearly equal, upper often more or less connate; keel-pet. obtuse, stam. diadelphous; style curved upwards; pod much compressed, composed of several 1-seeded joints, usually indehiscent (very rarely opening along ventral suture).—Sp. 120; 49 in *Fl. B. Ind.*

Joints of pod well marked, as long as or longer than broad (except sometimes No. 6).
  Joints indehiscent.
    Stems more or less erect.
      Fl. in axillary umbels or heads (*Dendrolobium*).
        Branches cylindrical, lflts. obtuse . 1. D. UMBELLATUM.
        Branches triquetrous, lflts. acute . 2. D. CEPHALOTES.
      Fl. in terminal or axillary racemes.
        Each cluster of fl. concealed between a pair of roundish lflts. (*Phyllodium*) 3. D. PULCHELLUM.
        Fl. not concealed.
          Pod under ½ in., of 2 joints (*Dicerma*) 4. D. BIARTICULATUM.
          Pod over ½ in.
            Branches triquetrous, l. 1-foliolate (*Pteroloma*) . . . . 6. D. TRIQUETRUM.
            Branches not triquetrous.
              Joints at least twice as long as broad.
                Pod 3–4 in., joints 5 times as long as broad . . . 7. D. ORMOCARPOIDES.
                Pod 2–3 in., joints 2½ times as long as broad (*Catenaria*) . 5. D. LABURNIFOLIUM.
                Pod 1–1½ in., joints twice as long as broad.
                  Pod long-stalked, joints obliquely truncate . . 8. D. GARDNERI.
                  Pod sessile, joints semi-circular . . . . 12. D. THWAITESII.
              Joints less than twice as long as broad.
                Pod shortly stalked . . 9. D. SCALPE.
                Pod sessile.
                  L. 1-foliolate.
                    Lflt. broad-oval, acute . 10. D. GANGETICUM.
                    Lflt. ovate-deltoid, obtuse 11. D. LATIFOLIUM.
                  L. 3-foliolate.
                    Bracts small, setaceous . 13. D. WIGHTII.
                    Bracts large, ovate or lanceolate.
                      Pod of 5–8 joints indented on ventral margin.
                        Pods spreading . 14. D. RUFESCENS.
                        Pods erect . . 15. D. HETEROCARPUM.
                      Pod of 3 or 4 joints, not indented . . 16. D. JUCUNDUM.

Stems numerous, prostrate, slender.
Fl. all axillary, without a peduncle . 17. D. TRIFLORUM.
Some fl. on a peduncle . . . . . 18. D. HETEROPHYLLUM.
Joints dehiscent; stems prostrate, slender . 19. D. PARVIFLORUM.
Joints of pod inconspicuous, shorter than broad, dehiscent.
Pod very slightly hairy . . . . . . 20. D. GYRANS.
Pod with long shaggy hair . . . . . 21. D. GYROIDES.

1. **D. umbellatum,** *DC. Prod.* ii. 325 (1825).
Herm. Mus. 21. Burm. Thes. 115. Fl. Zeyl. n. 293. *Hedysarum umbellatum*, Sp. Pl. 747; Moon Cat. 54. *Dendrolobium umbellatum*, Benth., Thw. Enum. 86. C. P. 1436.
Fl. B. Ind. ii. 161. Burm. Thes. t. 51.

A shrub, 5–6 ft., much branched, young parts with dense, adpressed pubescence; l. 3-foliolate, rachis 1–1½ in., downy, stip. small, acicular, quickly falling, lflts. 1½–3 in. (the terminal much the largest) on short silky stalks, oval, obtuse at both ends, glabrous above, pubescent and whitish beneath, lat. veins prominent, parallel, curved, running to margin; fl. on silky ped. as long as or longer than cal., about 4–10 in stalked axillary umbels, peduncles ½–1 in.; cal. densely silky; pod 1–1½ in., slightly curved, of 3–6 broadly oblong joints, slightly indented between each, reticulate-veined, adpressed-hairy.

Low country; common.
Also in Burma, Malaya, Polynesia, and the Mascarene Is.

2. **D. Cephalotes,** *Wall. Cat.* n. 5721 (1828).
Dendrolobium Cephalotes, Benth. Thw. Enum. 86. C. P. 2780.
Fl. B. Ind. ii. 161. Wight, Ic. tt. 373 and 209 (*D. congestum*).

A shrub, 4–5 ft., branches ascending, acutely triangular, densely adpressed-silky; l. 3-foliolate, rachis ¾–1¼ in., triquetrous, channelled above, stip. lanceolate, bristle-pointed, glabrous, persistent, lflts. shortly stalked, with filiform conspicuous stipels, 2–3½ in. (terminal one rather the larger), very acute, glabrous above, silky and white beneath when young, veins conspicuous beneath, parallel, reaching to margin; fl. very numerous, very shortly stalked, densely crowded in roundish axillary heads, peduncle very short ⅛–¼ in., cal. densely white-silky; pod ¾–1 in., slightly curved, of 3–6 joints which are as broad as long, indented between the joints, slightly pubescent.

Low country up to 3000 ft.; very common. Fl. Jan.; bright red.
Also in India, Malaya, and China.

3. **D. pulchellum,** *Benth. in Fl. B. Ind.* ii. 162 (1876). **Hampilla,** *S.*

Herm. Mus. 36, 58. Burm. Thes. 116. Fl. Zeyl. n. 292. *Hedysarum pulchellum*, L. Sp. Pl. 747; Moon Cat. 54. *Phyllodium pulchellum*, Desv., Thw. Enum. 86. C. P. 1279.

Fl. B. Ind. ii. 162. Burm. Thes. t. 52. Wight, Ic. t. 418.

A small shrub about 4 ft., branches numerous, pubescent; l. 3-foliolate, rachis short, about 1 in., pubescent, stip. small, acuminate, lflts. shortly stalked, the terminal nearly twice as large as the lat. ones, oblong-lanceolate, rounded at base, subacute or obtuse at apex, repand or undulate at margin, nearly glabrous above, densely silky-pubescent and pale beneath; fl. small on short ped., arranged in clusters of 3 or 4 in long erect terminal and axillary inflor., each cluster entirely concealed by a pair of rotundate lflts. ('bracts') placed back to back on a very short common petiole and persistent; cal. pubescent; pod small, $\frac{3}{8}$ in., joints 2, a little longer than broad, glabrous, reticulate-veined.

Low country up to 3000 ft.; common, especially in the dry region. Fl. March.

Also in India, Malaya, and China.

The lflts. enclosing the little umbels of flowers and fruit are obviously the lateral ones of the ordinary foliage leaves modified; the large terminal lflt. is suppressed, but when young the rachis is present as a long-pointed bristle.

Hermann gives 'Palæghas' as the S. name for this.

4. **D. biarticulatum,** *Benth. in Fl. B. Ind.* ii. 163 (1876).

Herm. Mus. 5, 31. Burm. Thes. 114. Fl. Zeyl. n. 296. *Hedysarum biarticulatum*, L. Sp. Pl. 747. Moon Cat. 54. *Dicerma biarticulatum* DC., Thw. Enum. 86. C. P. 1450.

Fl. B. Ind. ii. 163. Burm. Thes. t. 50, f. 2. Wight, Ic. t. 419.

A small spreading shrub, with slender elongated branches covered with adpressed silky hair; l. small, 3-foliolate, rachis $\frac{1}{8}$–$\frac{1}{4}$ in., hairy, stip. connate at back, laciniate, striate, glabrous, brown, lflts. on very short hairy stalks, oblong-lanceolate, obtuse, minutely apiculate, conduplicate, glabrous above, more or less silky beneath; fl. on very short ped., in small clusters, laxly arranged in a long, narrow, spicate, terminal raceme, bracts small, setaceous; cal.-segm. longer than tube, slightly silky; pod small, $\frac{3}{8}$ in., of 2 rounded joints, very deeply indented between them, strongly pubescent.

Low country; common, especially in the dry region. Fl. Jan.–March.

Also in India, Burma, Malay Islands, and N. Australia.

5. **D. laburnifolium,** *DC. Prod.* ii. 337 (1825).

D. cateniferum, Arn. Pug. 13. *Catenaria laburnifolia*, Benth., Thw. Enum. 86. C. P. 1435.

Fl. B. Ind. ii. 163.

A slender shrub with nearly glabrous branches, l. 3-foliolate, rachis 1½–1¾ in., channelled, nearly glabrous, stip. small, acuminate, lflts. 3–4 in. (the terminal rather the largest), lanceolate, acute, glabrous above, very slightly pubescent beneath, stiff; fl. medium-sized, on slender spreading ped. a little longer than cal., racemes slender, axillary, about as long as l., bracts setaceous; cal. slightly pilose, the lowest segm. much the longest; pod 2–2¾ in., linear, indented between the joints, joints 3–6, more than twice as long as broad, rough with minute hooked hairs.

Upper zone of moist low country, rather common (?). Hantane; Dolosbagie. Fl. Dec.

Also in E. Bengal, Malay Is., China, and Japan.

6. **D. triquetrum,** *DC. Prod.* ii. 326 (1825). **Baloliya,** *S.*
Herm. Mus. 35. Burm. Thes. 176. Fl. Zeyl. n. 286. *Hedysarum triquetrum*, L. Sp. Pl. 746. Moon Cat. 54. *Pteroloma triquetrum*, Benth., Thw. Enum. 86. C. P. 1431.
Fl. B. Ind. ii. 163. Burm. Thes. t. 81 (leaves only).

An erect shrub, branches few, erect, triquetrous, glabrous or hairy on the angles only; l. 1-foliolate, petiole ¾–1¼ in., leaflike, with a broad wing on either side, stip. ½–¾ in., erect, lanceolate-linear, very acute, glabrous, brown, lflt. variable in size, 3–6 in. (the uppermost ones often smaller), linear-lanceolate (the uppermost almost linear), subcordate at base, gradually tapering to acute apex, glabrous above, hairy on midrib beneath; fl. small, on short slender ped., 1–3 in a cluster, arranged rather laxly in slender, erect, spike-like terminal and axillary racemes 6–12 in. long, bracts setaceous; cal. with few bristly hairs; pod about 1 in., erect, linear-oblong with 4–7 joints, continuous and scarcely indented joints as broad as or broader than long, hairy.

Moist low country up to 3000 ft.; very common. Fl. Sept.; bright violet, often white.

Also in India, Burma, China, Philippine and Seychelle Is.

Burmann's figure was made from a living plant in the Amsterdam Hortus Medicus, grown from seed sent from Ceylon by Hartog.

7. **D. ormocarpoides,** *DC. Prod.* ii. 327 (1825).
Thw. Enum. 87, 441. C. P. 3812.
Fl. B. Ind. ii. 164.

A small slender under-shrub, the stem procumbent and rooting at the base, branches hairy; l. 1-foliolate, striate, glabrous, 3–4 in., ovate, somewhat acuminate, mucronate, rounded at base, somewhat crenate at margin, glabrous above, paler and silky-pubescent especially on veins beneath, petiole ½–¾ in., stip. acuminate, stipels filiform, conspicuous; fl. few,

on filiform spreading ped., much longer than cal., in very lax terminal racemes, bracts small; cal. slightly hairy; pod 3–4 in. long, spreading or pendulous, linear, somewhat curved, distinctly constricted between the joints, joints 4–6, five times as long as broad, longitudinally striate, densely covered with minute hooked hairs.

Montane zone; very rare. Matale East (Thwaites). Fl. June; pale violet.

Also in the hills of S. India.

8. **D. Gardneri,** *Benth. Pl. Jungh.* 226 (1853).
D. podocarpum, Thw. Enum. 87 (non DC.). C. P. 1434.
Fl. B. Ind. ii. 165.

A slender, slightly branched, erect perennial, $1\frac{1}{2}$–3 ft., woody at the base, stem angled, slightly hairy, purplish; l. large, mostly from the base of stem, 3-foliolate, rachis long, 2–6 in., stip. acute, striate, glabrous, lflts. 2–5 in. (the terminal the largest), ovate, acuminate, obtuse, glabrous on both sides, the lat. ones usually unequal-sided; fl. medium-sized, on slender ped. $\frac{1}{8}$–$\frac{3}{8}$ in. long, in small clusters of 3 or 4 distantly placed on a long erect terminal raceme or panicle much exceeding the l.; cal. cup-shaped, segm. very short and broad; pod on a stalk $\frac{1}{2}$–$\frac{5}{8}$ in. long, joints 1–3, about $\frac{1}{2}$ in. long, each one bent down at right angles with the last or with the stalk, wider at the end which is rounded and obliquely truncate, tapering to very narrow base, finely hairy.

Moist region; 1000–4000 ft. in shady places; rather common. Matale; Hantane; Ramboda; Hunasgiria; Rangala; Nitre Cave. Fl. April, Sept., Oct.; pinkish white.

Also in S. India and in Japan.

A pretty and curious plant; very distinct from our other species.

9. **D. Scalpe,** *DC. Prod.* ii. 334 (1825).
D. strangulatum, W. and A., Thw. Enum. 87. C. P. 1433.
Fl. B. Ind. ii. 165. Wight, Ic. t. 985 (*D. strangulatum*).

A slender, erect perennial, woody at base, stem slightly angled, pubescent, l. 3-foliolate, spreading, rachis $1\frac{1}{2}$–$2\frac{1}{2}$ in., hairy, stip. large $\frac{1}{2}$–$\frac{3}{4}$ in., persistent, brown, lflts. $1\frac{1}{2}$–$2\frac{1}{2}$ in., ovate, rounded at base, acute, slightly hairy above, densely and finely pubescent beneath, the terminal one rather larger and somewhat rhomboidal; fl. rather large on slender ascending ped. 1–$1\frac{1}{4}$ in. long, arranged in pairs on branches of very lax slender pubescent terminal panicles much overtopping the l., bracts small, ovate, caducous; cal. hairy, deeply cut, segm. acuminate; pod very shortly stalked, nearly straight, straight on dorsal, deeply indented on ventral

margin, joints 3 or 4, boat-shaped, $1\frac{1}{2}$ as long as broad, finely pubescent.

Montane zone; rather common. Fl. Oct.–Jan.; salmon-red or pale orange.

Also in S. India, Malay Is., Mascarene Is., and Trop. Africa.

A graceful plant, worth cultivation for the peculiar colour of its flowers.

10. **D. gangeticum,** *DC. Prod.* ii. 327 (1825).

Burm. Thes. 113. *Hedysarum gangeticum*, L. Sp. Pl. 746. Thw. Enum. 411. C. P. 3813.

Fl. B. Ind. ii. 168. Burm. Thes. t. 49, f. 2. Wight, Ic. tt. 271 and (*D. latifolium*) 272 (not 270).

A slender under-shrub, stems cylindrical, nearly glabrous, young parts hairy; l. 1-foliolate, petiole long, $\frac{3}{4}$–$1\frac{1}{4}$ in., hairy, stip. setaceous, lflt. broadly oval or rotundate, rounded at base, subacute, glabrous above, silky and whitish beneath; fl. very small, on short erect hairy ped. in lax erect terminal spicate racemes, bracts setaceous; cal. hairy, segm. lanceolate; pod small, $\frac{1}{2}$–1 in., usually somewhat curved, nearly straight on dorsal, very deeply indented on ventral margin, joints 4–8, as broad as long, rounded on ventral margin, set with minute hooked hairs.

Montane zone, apparently very rare, but probably overlooked. Matale East (Thwaites). Fl. May.

Throughout Trop. Asia and Africa, &c.

11. **D. latifolium,** *DC. Prod.* ii. 327 (1825).

Thw. Enum. 87. C. P. 3588.

Fl. B. Ind. ii. 168. Wight, Ic. t. 270 (not 272). Bot. Reg. t. 355.

A small shrub, 3–5 ft., branches densely velvety-pubescent, l. 1-foliolate, petiole short, about $\frac{1}{2}$ in., stip. broad, suddenly acuminate, lflt. $2\frac{1}{2}$–3 in., deltoid-ovate, truncate or subcordate at base, obtuse or subacute, repand at margin, finely hairy above, densely velvety beneath; fl. small, numerous, on ped. shorter than cal., rather crowded on the branches of copious axillary and terminal ascending panicles; cal. hairy, segm. linear-lanceolate; pod about $\frac{3}{4}$ in., straight, slightly indented on dorsal, much more so on ventral margin, joints 4–6, as long as broad, hairy.

Dry region; rather rare. Bibile; Mineri. There are also specimens labelled Matale East, probably from the low country. Fl. Feb., June, August; bright red-purple.

Throughout the Tropics of the Old World.

12. **D. Thwaitesii,** *Baker in Fl. B. Ind.* ii. 169 (1876).

D. strangulatum, var. *β minor*, Thw. Enum. 87. C. P. 3327.

Fl. B. Ind. ii. 169.

A very small perennial, slightly woody at base; stem prostrate and rooting at base, scarcely branched, very hairy; l. 3-foliolate, rachis $\frac{3}{4}$–$1\frac{1}{2}$ in., hairy, stip. narrow, very acuminate, with long white hairs, lflts. small $\frac{3}{4}$–$1\frac{1}{2}$ in., oval, obtuse or subacute, nearly glabrous above, pale with silky hair beneath, the terminal one the largest; fl. few, very small, on slender ascending ped. $\frac{1}{2}$ in. long, in pairs in slender, erect, very lax, terminal racemes, bracts caducous; cal. nearly glabrous, segm. lanceolate, acute; pod $\frac{3}{4}$–1 in., straight, scarcely indented along dorsal, much so along ventral edge, joints 2–4, twice as long as broad, semicircular, covered with fine hooked hairs.

Lower montane zone; rare. Ambagamuwa. Fl. Oct., Nov.
Endemic.

This appears to be closely allied to *D. Scalpe*, of which Thwaites, indeed, considered it a variety.

13. **D. Wightii,** *Grah. in Wall. Cat.* n. 5718 (1828).
D. Walkeri, Arn. Pug. 13. Thw. Enum. 87. C. P. 3129.
Fl. B. Ind. ii. 169.

A tall perennial herb, 2–4 ft., branches slender, striate, slightly hairy; l. 3-foliolate, rachis $1\frac{1}{2}$–$2\frac{1}{2}$ in., stip. setaceous, soon falling, lflts. 2–$3\frac{1}{2}$ in., lanceolate-oval, obtuse or subacute, mucronate, somewhat undulate at margin, glabrous or slightly hairy above, finely silky beneath; fl. small, on very slender ped. 2–4 times as long as cal., in pairs in very lax narrow, elongated, spicate, terminal and axillary racemes, bracts setaceous as long as ped., conspicuous; cal. very hairy, segm. lanceolate, acute; pod rather under 1 in., slender slightly falcately curved, scarcely indented on dorsal, deeply so on ventral edge, joints 6 or 7, as broad as long, transversely wrinkled, slightly rough with minute bristles.

Low country; very common. Fl. Jan.–April.
Also in S. India.

D. Walkeri, Arn. (founded on specimens of Walker's n. 205) seems to be merely a sub-glabrous state; but C. P. 2973, referred to this by Thw. (l. c. 87), is *D. cajanæfolium* DC.—an introduced weed in the Bot. Gardens, and a Tropical American species. To this also, or to the closely allied *D. leiocarpum*, Don, of Brazil, is to be referred C. P. 3544 (from Maturata) given by Thwaites (l. c. 411) as *Hedysarum mucronatum*, Bl., no doubt also an introduction.

D. diffusum, DC. Another weed in the Peradeniya Gardens and round about appears to be this common Indian species.

14. **D. rufescens,** *DC. Prod.* ii. 335 (1825).
D. ferrugineum, Wall., Thw. Enum. 87. C. P. 1426.
Fl. B. Ind. ii. 171. Wight, Ill. t. 79; Ic. t. 984.

An erect much-branched under-shrub, branches terete or nearly so, densely clothed with short spreading yellow or orange hair; l. 3-foliolate, rachis 1–1¼ in., pilose, stip. quickly caducous, lflts. 1–2 in., obovate, rounded, truncate or retuse at apex, strongly mucronate, glabrous above, densely silky and silvery beneath; fl. large on erect hairy ped. longer than cal., in rather dense terminal and axillary racemes, bracts large, ovate, acuminate, very silky, soon falling; cal. puberulous, segm. lanceolate, acute, ciliate; pod 1–1½ in., linear, falcately curved, not at all indented on dorsal and only slightly so on ventral margin, joints 5–8, longer than broad, slightly pubescent.

Moist region up to 4000 ft.; common. Fl. Jan.–April; bright purple. Also in S. India.

The young spikes are completely covered by the large overlapping bracts. Varies very much in amount of hairiness, sometimes almost glabrous. Occasionally cultivated for its pretty flowers.

[*D. capitatum*, DC. Given for Ceylon in Fl. B. Ind. ii. 171, on authority of the younger Burman. That author, however (Fl. Ind. 167), does not give Ceylon as a locality, but merely quotes as a synonym a name in Burm. Thes. 115. This from the citation of Hermann given is only a variety of *D. heterocarpum*. But the plant is likely enough to occur here.]

15. **D. heterocarpum,** *DC. Prod.* ii. 337 (1825). **Èt-undu-piyali,** *S.*

Herm. Mus. 22. Burm. Thes. 117. Fl. Zeyl. n. 294. *Hedysarum heterocarpum*, L. Sp. Pl. 747; Moon Cat. 54. *D. polycarpum*, DC., Thw. Enum. 86. C. P. 1425.

Fl. B. Ind. ii. 171. Burm. Thes. t. 53 f. 1. Wight, Ic. t. 406 (*D. polycarpum*).

A suberect perennial, somewhat woody and often rooting below, branches very numerous, elongated, cylindrical, finely downy with adpressed hair; l. 3-foliolate, rachis 1–1¼ in., stip. large, narrow, filiform-acuminate, persistent, lflts. variable, 1–2½ in., shortly stalked, lanceolate or oval, obtuse or subacute, glabrous above, more or less silky with adpressed hair beneath, stipels filiform, conspicuous; fl. rather small, on slender erect ped. longer than cal., crowded in short, dense, erect, terminal and axillary racemes, bracts large, lanceolate, very acuminate, ciliate; cal. nearly glabrous; pods erect, crowded, about 1 in., straight, not indented on dorsal, moderately so on ventral margin, joints 5–7, about as broad as long, with raised reticulation, glabrous or hairy.

Var. β, **trichocaulon,** *Baker in Fl. B. Ind. l. c.* C. P. 3512.

Stem and branches with white spreading hair; racemes more lax, bracts less acuminate; pods hairy.

Moist low country and lower montane zone; very common; var. β in Maturata, Kalupahane, &c. Fl. May–Sept., Nov.; purple, sometimes white.

Throughout the Eastern Tropics, China, and Japan.

As DC.'s two names are of the same date, I have preferred to maintain that which preserves Linnæus's specific name. This specially belongs to the Ceylon plant, though the peculiarity to which it refers, *i.e.*, the lower pods with only one joint, is by no means always or even often present.

16. **D. jucundum,** *Thw. Enum.* 411 (1864). [PLATE XXVIII.]
C. P. 3778.
Fl. B. Ind. ii. 172.

A shrub, 3 or 4 ft. high, branches stout, purplish, the young shoots white with dense silky hair; l. rather crowded, 3-foliolate, rachis 1–1½ in., velvety, stip. ovate, acuminate slightly silky, crimson, lflts. 1–2 in. (the terminal rather the larger), oblong or obovate-oval, very obtuse, minutely mucronate, glabrous above, white with a dense covering of silky hair beneath and with very prominent lat. veins; fl. large on slender erect ped., longer than cal., usually in pairs; arranged in short, erect, pubescent, terminal racemes, bracts large, ovate, acute, silky, red, soon falling; cal. nearly glabrous, segm. longer than tube, narrowly lanceolate, acuminate, ciliate; pod ¾–1 in., straight, shortly beaked, not at all indented on dorsal and scarcely on ventral margin, joints 3 or 4, half as long again as broad, faintly reticulate, slightly pilose.

Lower montane zone; very rare. Half way up Lagalla, Matale East; first discovered by Mr. A. O. Brodie in Oct. 1862.

Fl. June, Sept., Oct.; rich mauve-purple.

Endemic.

A showy species, well suited for garden cultivation.

17. **D. triflorum,** *DC. Prod.* 334 (1825). **Hin-undupiyali,** *S.*
Herm. Mus. 2, 38. Burm. Thes. 118. Fl. Zeyl. n. 297. *Hedysarum triflorum*, L. Sp. Pl. 747 (pro max. parte); Moon Cat. 54. Thw. Enum. 86. C. P. 2779.
Fl. B. Ind. ii. 173. Burm. Thes. t. 54, f. 2. Wight, Ic. t. 292.

A very small perennial herb, with numerous long slender prostrate branches rooting at the nodes, clothed with white spreading hairs; l. small, 3-foliolate (lower ones often 1-foliolate), rachis under ½ in. stip. ovate, acuminate, persistent, lflts. ¼–⅜ in., broadly oval or obovate or obcordate, glabrous above, slightly silky beneath; fl. very small, on long very slender hairy ped., 1–5 (usually 3) together in the axils of l.; cal. with few bristly hairs, segm. long, setaceous; pod ⅓–½ in., nearly straight, not indented on dorsal, slightly so on ventral margin, joints 2–4, as long as broad, reticulate, glabrous.

Low country up to 2000 ft. or more; very common. Fl. June–Oct.; bright purple.

Throughout the Tropics.

An abundant and valuable constituent of turf in Ceylon, standing drought well. This and *D. heterophyllum* are used as a medicine in cases of fever.

18. **D. heterophyllum,** *DC. Prod.* ii. 334 (1825). **Maha-undupiyali,** *S.*

Burm. Thes. 118. Fl. Zeyl. n. 297 *β*. *Hedysarum heterophyllum*, Willd., Moon Cat. 54. Thw. Enum. 86. C. P. 2778.

Fl. B. Ind. ii. 173. Burm. Thes. t. 54, f. 1. Wight, Ic. t. 291.

A perennial herb, stems numerous, prostrate, slender, rooting at lower nodes, densely covered with spreading hairs; l. 3-foliolate, rachis $\frac{1}{2}$–$\frac{3}{4}$ in., hairy, stip. broadly lanceolate, acute, ciliate, persistent, lflts. $\frac{1}{2}$–1 in. (term. one the largest), oval or obovate-oval, rounded at both ends, glabrous above, sparingly hairy beneath; fl. small, on very slender ped., $\frac{1}{2}$–1 in. long, 2–4 together, axillary racemose or umbellate, bracts inconspicuous; cal. very hairy, segm. narrow, setaceous; pod. $\frac{3}{4}$–1 in., straight, not at all indented on dorsal, but considerably so on ventral margin, joints 3–6, as broad as long, faintly reticulate, slightly hairy.

Low country up to 2000 ft.; very common. Fl. pale purple.

Also throughout India and Malaya, and in China, the Philippines and the Mascarene Is.

19. **D. parvifolium,** *DC. Prod.* ii. 334 (1825).

Thw. Enum. 68. C. P. 1429.

Fl. B. Ind. ii. 174.

A low under-shrub, with very numerous slender branches trailing to a great length, with many short lateral twigs, when young triangular, hairy; l. very numerous, crowded, small, 3- (or often 1-) foliolate, rachis short, filiform, stip. linear-lanceolate, acuminate, persistent, lflts. $\frac{1}{8}$–$\frac{3}{4}$ in. (the terminal much the largest), lanceolate or oval, obtuse or subacute, mucronate, glabrous above, slightly hairy beneath; fl. very small, on long, filiform, hairy ped., arranged in very lax spreading racemes, which are axillary or terminal on the lateral twigs, much exceeding l., bracts inconspicuous; cal. covered with long silky hairs, segm. long, setaceous; pod under $\frac{1}{4}$ in., straight, indented on both margins, dehiscent along ventral suture and everted, joints 1–4, roundish, about as long as broad, rough with minute hairs.

Montane zone to over 7000 ft.; common in patana land. I have never seen it in the low country. Fl. Feb., April, September; bright pink.

Also in India, Malaya, China, and Japan.

Each joint of the pod is completely dehiscent along the ventral suture, but the valves remain united along the dorsal margin and are stiffly everted.

20. **D. gyrans,** *DC. Prod.* ii. 326 (1825). **Chanchala,** *S.*
Hedysarum gyrans, L. f., Moon Cat. 54. Thw. Enum. 87. C. P. 1430.
Fl. B. Ind. ii. 174. Wight, Ic. t. 294.

An erect perennial, branches few, cylindrical, glabrous, young shoots roughly pubescent; l. 3- (often 1-) foliolate, rachis $\frac{3}{4}$–1 in., glabrous, stip. linear-lanceolate, acuminate soon falling; lflts. on very short densely pubescent stalks, very unequal, terminal one 2–3 in., drooping, linear-lanceolate, obtuse, glabrous above, silky-pubescent beneath, lat. ones about $\frac{1}{2}$ in., broadly linear, tapering to base; fl. of medium size, on short ped. arranged in rather long, erect, lax, terminal and axillary racemes, bracts broadly ovate, acuminate, glabrous, soon falling; cal. cup-shaped, nearly glabrous, segm. deltoid, short, subacute; pod 1$\frac{1}{2}$–1$\frac{3}{4}$ in., linear, slightly falcate, dehiscent along ventral suture which is slightly indented, slightly rough with short scattered hair, joints 5–10, broader than long, inconspicuous.

Moist and intermediate low country to 3000 ft.; rather rare. Hantane; Galagama; about Badulla, frequent. Moon's locality is Dumbara Fl. Feb.–April.; pale pink.

Throughout India, Malaya, and the Philippines.

This is the 'Telegraph,' or rather 'Semaphore Plant,' so named from the spontaneous jerky movements of the pair of small leaflets.

21. * **D. gyroides,** *DC. Prod.* ii. 326 (1825).
Thw. Enum. 87. C. P. 3326.
Fl. B. Ind. ii. 175.

A shrub, 4–6 ft. high, twigs pubescent; l. 3- or more usually 1-foliolate, rachis $\frac{3}{4}$–1 in., slender, often deflexed, stip. linear-lanceolate, long-acuminate, terminal lflt. 1$\frac{1}{4}$–2 in., oblong-oval, rounded at both ends, glabrous above, slightly pilose beneath, lat. ones $\frac{1}{2}$–$\frac{3}{4}$ in.; fl. of moderate size, on spreading hairy ped., crowded in short, pedunculate, terminal or axillary racemes, bracts broadly ovate, apiculate, ciliate, caducous; cal. campanulate, nearly glabrous, segm. short, triangular, subacute; pod 1–1$\frac{1}{4}$ in., nearly straight, dehiscent along ventral suture which is very slightly indented, densely shaggy with short fulvous hair, joints 5–9, broader than long.

Moist low country, probably introduced. Hantane (Hb. Perad.). I have only seen it as a cultivated plant here. Fl. April; purple.

Also in E. Bengal, Burma, and the Malay Islands.

21. ABRUS, *L.*

Twining perennials, l. abruptly pinnate with deciduous stipellate lflts., fl. on short swollen branchlets of axillary racemose panicles; cal. small, campanulate, truncate; keel-pet. completely connate, slightly curved longer than wings and standard; stam. 9 (tenth one absent), connate into a tube split above, adnate at base to standard; style glabrous, stigma capitate; pod flat, oblong or linear, 3–9-seeded with papery septa between the seeds.—Sp. 5; 3 in *Fl. B. Ind.*

Infl. shorter than l.; pod oblong . . . . . 1. A. PRECATORIUS.
Infl. much longer than l.; pod linear . . . . 2. A. PULCHELLUS.

1. **A. precatorius,** *L. Syst. Nat.* ed. 12, 472 (1767). **Olinda-wel,** *S.* **Kuntumani,** *T.*

Herm. Mus. 16. Burm. Thes. 177. Fl. Zeyl. n. 284. Moon Cat. 52. Thw. Enum. 91. C. P. 1466.

Fl. B. Ind. ii. 175. Bentl. and Trim. Med. Pl. ii. t. 77.

A perennial twiner, stems numerous, scarcely woody, slender, glabrous, with long internodes; l. spreading, pinnate, rachis 2–4 in., thickened at base, very slender, channelled, nearly glabrous, stip. minute, setaceous, lflts. 20–24 (10–12 pair) or more, opposite, very shortly stalked, quickly deciduous, about $\frac{3}{4}$ in., oblong, obtuse at both ends, minutely apiculate, glabrous above, slightly hairy beneath, thin; fl. rather small, shortly stalked, several together on very short swollen knob-like branches crowded at end of stout, curved, swollen peduncles, usually shorter than l.; cal. glabrous or very slightly silky; pod. $1\frac{1}{4}$–$1\frac{3}{4}$ in. by $\frac{1}{2}$ in. wide, flat, oblong, truncate, with a sharp deflexed beak, finely silky; seeds 3–5, rather over $\frac{1}{4}$ in., ovoid, usually bright scarlet with a black patch on top, polished.

Low country; common, especially in the dry region. Fl. Feb.; pale violet.

Every Tropical country.

The pretty scarlet and black seeds are well known, and are used as weights by jewellers. The flowers are sometimes white when the seeds are of the same colour; there is also a form with the seeds wholly black.

The root is the well-known 'Indian Liquorice,' *Glycyrrhiza indica* of the older writers, and is used both internally and externally in native medicine. The seeds are an acrid poison unless cooked.

2. **A. pulchellus,** *Wall. Cat.* n. 5819.

Thw. Enum. 91. C. P. 1467.

Fl. B. Ind. ii. 175.

Much like the last, but stems slightly hairy; lflts. 10–20 (5–10 pair), 1–$1\frac{1}{4}$ in., narrowly oblong; fl. less crowded in

more lax racemes with more elongated branches, and peduncles much exceeding l.; pods 2–2½ in. by ⅜ in. broad, linear, slightly curved upwards, shortly beaked, thinly hairy; seeds 9 or 10, oblong-ovoid, somewhat compressed, black.

Dry region; rather common. Fl. December–Feb.; pale violet.
Also in E. Bengal, Burma, Malay Islands, Trop. and S. Africa.

22. **SHUTERIA,*** *W. and A.*

Twiner, l. pinnately 3-foliolate, stipels conspicuous, fl. in short racemes; cal. tubular-campanulate, with short teeth; standard exceeding other pet.; stam. diadelphous; style beardless, stigma capitate; pod linear, flat, slightly curved upwards, with several seeds.—Sp. 5; 4 in *Fl. B. Ind.*

S. vestita, *W. and A. Prod.* 207 (1834).
Thw. Enum. 88. C. P. 661.
Fl. B. Ind. ii. 181. Wight, Ic. t. 165.

Stems slender, twining, and branched, very hairy; l.-rachis 1½–2½ in., hairy, stip. lanceolate, acute, ciliate, lflts. shortly stalked, broadly oval or rhomboid-oval, 1–1¾ in., rounded at both ends, apiculate, hairy on both sides, stipels long filiform; fl. small, on hairy ped., in erect axillary racemes shorter than l., bracts lanceolate, hairy, persistent; cal. densely covered with long hairs, teeth acuminate; pod 1–1¼ in., linear, nearly straight, compressed, thin, softly hairy; seeds 5–7, ovoid, compressed, brown.

Montane zone, 4000–7000 ft.; rather rare. N. Eliya; Maturata; Ramboda; Passara. Fl. August, January.
Also in the Indian hills.

23. **DUMASIA,** *DC.*

Twining herb, l. 3-foliolate, fl. in axillary racemes; cal. tubular, gibbous at base with an obliquely truncate mouth; pet. equal, wings and keel adherent, with very long claws; stam. diadelphous; ov. stalked; pod linear, torulose, 2- or 3-seeded.—Sp. 3; 2 in *Fl. B. Ind.*

D. villosa, *DC. Mém. Leg.* 257 (1825), var. **leiocarpa,** *Benth* (sp.).
D. pubescens, DC., Arn. Pug. 12. Thw. Enum. 88. C. P. 663.
Fl. B. Ind. ii. 183. Wight, Ic. t. 445 (*D. congesta*).

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* Named after Dr. Shuter, 'Naturalist on the Madras Establishment,' to whom the genus *Shutereia* (Convolvulaceæ) had, however, been dedicated the previous year (1833) by Choisy.

A twining herb, stems slender with long internodes, glabrous or with few adpressed hairs; l.-rachis 2–4 in., swollen at base, stip. small, linear, lflts. shortly stalked, $1\frac{1}{2}$–2 in., ovate, very obtuse, apiculate, glabrous on both sides or with very few hairs beneath; fl. moderate-sized, on slender ped., arranged in racemes which are either of 3 or 4 fl. and much shorter than l., or of 12–20 fl., and equalling l.; cal. quite glabrous, persistent; pod about $1\frac{1}{4}$ in., stalked and exserted beyond persistent cal., linear, straight, sharply beaked, torulose, perfectly glabrous; seeds 2 or 3, ovoid, $\frac{1}{4}$ in., black and shining.

Upper montane zone; common. Fl. Feb., March; pale yellow.
Also in the Indian mountains, and in Java, Madagascar, and Natal.
The ordinary form of this species has the stem densely hairy, and the leaves very pubescent beneath; but this has not been found in Ceylon.

24. **GLYCINE,** *L.*

Herbaceous twiner, l. 3-foliolate, with stipels, fl. small, numerous, in narrow racemes; cal. with a campanulate tube, segm. long, filiform; pet. about equal, not longer than cal.-segm.; stam. monadelphous, anth. uniform, all fertile; style beardless, stigma capitate; pod linear, straight, 2–4 seeded, with septa between seeds.—Sp. 12; 3 in *Fl. B. Ind.*

G. javanica, *L. Sp. Pl.* 754 (1753). **Goradiya,** *S.*
Moon Cat. 53. Benth. in Journ. Linn. Soc. viii. 266. *Soya Wightii*, Grah., Thw. Enum. 88. G. P. 1477.
Fl. B. Ind. ii. 183.

An herbaceous twiner, stems somewhat angular, clothed with deflexed hair, young shoots very silky; l.-rachis 2–3 in., with deflexed hair, stip. small, triangular, acute, lflts. shortly stalked, $1\frac{1}{4}$–$2\frac{1}{4}$ in., broadly oval (the lat. ones unequal-sided), subacute, strongly apiculate, softly hairy on both sides, paler beneath with the lat. veins strongly marked; fl. small, numerous, on short, slender, hairy ped., crowded in narrow, rather dense, shortly stalked, axillary racemes 1–6 in. long, bracts long, filiform, hairy; cal.-segm. setaceous, plumose; pod nearly 1 in., linear, compressed, pointed, densely hairy, somewhat compressed between seeds.

Low country; common. Fl. Nov., Dec.
Also in India, Java, and Trop. Africa.
Appears to be sometimes cultivated as a pulse.

25. TERAMNUS, *Sw.*

Herbaceous twiner, l. pinnately 3-foliolate, fl. small, in very lax racemes; cal. tubular-campanulate, segm. linear; pet. nearly equal, slightly exserted; stam. monadelphous, alternate ones small, abortive; style beardless, stigma capitate; pod linear, with a strongly hooked point, 8–10-seeded, septate between seeds.—Sp. 4; 2 in *Fl. B. Ind.*

T. labialis, *Spreng. Syst.* iii. 235 (1836).
Glycine parviflora, Lam., Moon Cat. 53 (?). *Glycine labialis*, L. f., Thw. Enum. 88. *Glycine mollis*, W. and A., Arn. Pug. 12. *T. mollis*, Benth. in Journ. Linn. Soc. viii. 265. C. P. 1471.
Fl. B. Ind. ii. 184. Wight, Ic. t. 168.

A twining herb, stems slender, much-branched, glabrous or with deflexed hair; l.-rachis 1–2½ in., glabrous or hairy like the stem, stip. minute, deciduous, lflts. 1½–3 in., lanceolate or oval-lanceolate, subacute, apiculate, glabrous on both sides or softly pubescent beneath, lat. ones unequal-sided; fl. small, on short slender ped., arranged in small clusters in usually very lax elongated slender axillary racemes, from 2–9 in. long, bracts small, setaceous; cal. hairy, segm. setaceous; pod 1½–2 in., narrowly linear, straight or slightly curved upwards, tipped with a short stout beak or hook abruptly curved upwards, hairy when young but nearly glabrous when mature; seeds 8–10, cylindrical, truncate at ends, dark brown.

Low country; common. Fl. Nov.–Dec.; pinkish or white.
Found throughout the Tropics.
A very variable plant, perhaps including more than one species. The hairy form is *T. mollis*, Benth.

26. MUCUNA, *Adans.*

Woody or herbaceous twiners, l. 3-foliolate, with stipels, fl. large, in drooping racemes; cal. campanulate, 2 upper segm. connate, lowest one longest; pet. exserted, very unequal, wings twice as long as standard, keel rather longer than wings, curved into a stiff beak at apex; stam. diadelphous; style beardless, stigma capitate; pod 1–few-seeded covered with sharp needle-like bristles, slightly compressed, turgid; seed large, with an oblong or linear hilum.—Sp. 20; 10 in *Fl. B. Ind.*

Pod winged on both sutures and sides.
  Cal. truncate with small teeth . . . . . 1. M. MONOSPERMA.
  Cal. 2-lipped, with large lower segm. . . 2. M. ATROPURPUREA.
Pod winged at sutures only . . . . . 3. M. GIGANTEA.
Pod without wings (*Stizolobium*) . . . . 4. M. PRURIENS.

1. **M. monosperma,** *DC. Prod.* ii. 406 (1825).
Thw. Enum. 89. C. P. 2662.
Fl. B. Ind. ii. 185. Wight, Ic. t. 35 (2 plates).

A large woody twiner, the younger branches clothed with rufous, deciduous tomentum; l. large, rachis 2½–4½ in., with red deciduous pubescence, stip. deciduous, lflts. on short swollen stalks, 2–4 in., rotundate or broadly oval, shortly acuminate, smooth above, more or less densely pubescent beneath, lat. ones unequal-sided; fl. large 1¾ in., on divaricate ped. ½ in. long, 6–10 in a lax pubescent raceme (or panicle) shorter than l.; cal. sparingly clothed with red bristles, upper segm. wanting; standard often with a few bristles on the back; pod 2 in., broadly ovate-ovoid, shortly stalked, somewhat curved, with a short decurved beak, with a broad double horizontal wing along both sutures, and several (about 6) broad erect distant wings extending from them at right angles nearly half way down the sides, the whole covered with orange-red deciduous wool mingled with irritant red bristles; seed solitary, nearly circular, compressed, dark brown, hilum linear, extending round ¾ of the edge.

Upper zone of moist low country; rather rare. Kitulgala; Hunasgiria; Lunugala; Uva. Fl. Jan.; bright violet, keel green.

Hills of India and Burma.

This is probably *Stizolobium rugosum*, Moon Cat. 53, from Kandy. Our plant has the sutures of the pod very distinctly double-winged, and thus does not well agree with published descriptions of *M. monosperma*.

2. **M. atropurpurea,** *DC. Prod.* ii. 406 (1825). **Punnakalichi, Phandatullai,** *T.*
Thw. Enum. 89. C. P. 1483.
Fl. B. Ind. ii. 186.

A large woody twiner, young branches slender, glabrous; l.-rachis 2–3 in., glabrous, stip. deciduous, lflts. shortly stalked, 2½–4 in., lanceolate or oval, acuminate, acute, glabrous on both sides, lat. veins very oblique; fl. very large, 2¼–2½ in., on drooping ped. ½–¾ in., about 10–15 in a short racemose panicle; cal. large, densely downy, with a very few orange bristles, 3 lower segm. triangular, equal; pod 3–4 in., oblong-ovoid, scarcely stalked, blunt, doubly winged along sutures, and with numerous (10–14) deep, close, parallel, flat wings or plaits running obliquely from each across sides, and meeting along centre, slightly pubescent and clothed with copious red irritant bristles; seeds 2 (or 1), 1 in., broadly ovoid, slightly compressed, grey mottled with brownish-black, hilum extending ½ round edge.

Dry region; rather rare. N. Province (A. Clark); Batticaloa (Gardner); Hunguranketa; Trincomalie (C. La Brooy); Bintenne District. Fl. Feb.; rich blue-purple.

Also in Peninsular India and at Malacca.

The same remark as to the pod applies to this as to the last. The sutures lie at the bottom of a very deep furrow formed by the wings, which are ¼ in. or more high.

3. **M. gigantea,** *DC. Prod.* ii. 405 (1825).
Stizolobium giganteum, Pers., Moon Cat. 53. Thw. Enum. 89. C. P. 3587.
Fl. B. Ind. ii. 186 (not given for Ceylon). Hk. Bot. Misc. ii. t. supp. 14.

A large woody twiner, with glabrous branches; lflts. ovate, acute, glabrous when mature; fl. on long slender ped., almost umbellate at end of long peduncles; pod 4–6 in., stalked, linear-oblong, apiculate, with a broad double wing along both sutures, but without wings or plaits on the sides, densely covered with long adpressed chestnut-brown, irritant bristles.

Dry country; very rare. I have seen only the C. P. specimen (a pod merely), which was collected by Gardner, and is labelled 'Batticaloa' (?). Moon's locality is Bentota. It grows in the Bot. Gardens, Peradeniya. Fl. Jan.; sulphur-yellow.

Also in Peninsular India, Malaya, Polynesia, &c.

4. **M. pruriens,** *DC. Prod.* ii. 405 (1825). **Achariya-pala,** *S.*
Burm. Thes. 191. Herm. Mus. 67. Fl. Zeyl. n. 539. *Dolichos pruriens*, L. Sp. Pl. ii. 1019. *Stizolobium pruriens*, Pers., Moon Cat. 53. *M. prurita*, Hook., Thw. Enum. 89. C. P. 3150.
Fl. B. Ind. ii. 187. Hk. Bot. Misc. ii. t. suppl. 13. Bentl. and Trim. Med. Pl. ii. t. 78.

An annual (?), semi-woody twiner, branches slender, usually clothed with short white deflexed hairs; l. large, rachis 3–5 in., sparingly deflexed-hairy, stip. linear-setaceous, hairy, lflts. 3–4 in., on short thick hairy stalks, terminal one smallest and rhomboid-oval, lat. ones very unequal with the lower half greatly dilated, all acute, mucronate, pubescent above, densely covered with shining silvery adpressed hair beneath; fl. numerous, 1½–1¾ in. long, on short pubescent ped., usually 2 or 3 together at intervals in a slender pubescent raceme 6–12 in long, bracts ½ in. lanceolate, hairy, soon falling; cal. densely silky, 2 upper segm. completely connate, lowest much longest; pod 2½–3 in. by about ½ in. broad, linear, blunt, falcately curved at both ends, with a longitudinal rib along whole length of each valve but without wings, densely covered with close rather weak orange-brown irritant bristles pointing backward and readily detached, 4–6-seeded with partitions between them; seed ovoid, ¼ in., compressed, brownish mottled with black, hilum oblong, not half the length of seed.

Var β, **biflora,** *Trim. Cat. Ceyl. Pl.* 25.

L. smaller, more hairy above; peduncles about 1 in., erect, 2-flowered.

Dry and intermediate regions; rather common. Var. β, Batticaloa. Fl. Jan., Feb.; dull dark purple, the keel yellowish-green.

Found throughout the Tropics.

This is the 'Cowage' or 'Cowitch' plant. Moon's S. name is 'Weldamaniya.'

27. ERYTHRINA, *L.*

Trees with prickles on the bark, l. pinnately trifoliolate, with stipels, deciduous, fl. large in secund racemes; cal. tubular, splitting irregularly; pet. very unequal, standard much longer than wings or keel, keel-pet. distinct; stam. diadelphous, but the upper one often connate with the rest half way up; style beardless, stigma capitate; pod cylindrical torulose, 3–10-seeded; seed large, with a large oval hilum.—Sp. 30; 7 in *Fl. B. Ind.*

Lflts. roundish-ovate, green on both sides . . 1. E. INDICA.
Lflts. oval, white beneath . . . . 2. E. OVALIFOLIA.

1. **E. indica,** *Lam. Enc. Méth.* ii. 391 (1786). **Erabadu,** *S.* **Mullu-murukku,** *T.*

Herm. Mus. 49. Fl. Zeyl. n. 275. *E. corallodendrum*, L. Sp. Pl. i. 706 (in part). Moon Cat. 52. Thw. Enum. 89. C. P. 1464.

Fl. B. Ind. ii. 188. Wight, Ic. t. 58.

A tree attaining to a large size, bark thin, smooth, grey, young twigs thick, set with small straight, horizontal, broad-based sharp black prickles, leaf-scars conspicuous; l. very large, deciduous, rachis 6–12 in., smooth, dilated at base, stip. none or very early caducous, lflts. 4–6 in. on short swollen stalks, readily disarticulating, roundish-ovate, acute, glabrous and green on both sides, the term. one the largest, stipels thick roundish persistent; fl. numerous large, on stout puberulous horizontally spreading ped. about $\frac{1}{2}$ in. long, arranged in 2's or 3's, and closely crowded on the upper half of very stout, rigid puberulous racemes 6–12 in. long, 2–4 of which diverge horizontally from the summit of the branches; cal. (before expansion of fl.) tubular, $1\frac{1}{4}$ in., covered with deciduous tomentum, upper segm. subulate, sharp but not rigid, two lat. similar but smaller, lowest one longer, doubled over the rest to form a blunt point to the bud, soon splitting along the back (between the upper teeth) to the base and the whole turned down like a spathe; standard nearly 3 in., wings less than 1 in., keel-pet. $\frac{3}{4}$ in.; stam. much exserted and projecting in

front of fl., $2\frac{3}{4}$ in.; pod 5–6 in., cylindrical, distinctly torulose with a sharp curved beak; seeds 3–8, bean-like, about 1 in. long.

Low country; very common, and much planted. Fl. Feb.; scarlet, the wings and keel crimson.

Also throughout India and Malaya, Java, and Polynesia.

When well grown this is a handsome tree; but as usually seen—planted for hedges or as a support for climbing plants—it is a shabby stunted bush. The brilliant flowers are produced when the branches are bare of leaves, and give the plant the name of 'Coral-tree.'

A variety with pale pink flowers is figured by Moon in his collection of drawings in the Brit. Mus. labelled 'Ela-erabadu.'

The indurated incurved tip of the lowest segm. of calyx prevents the bud from opening, and the growing standard forces its point through the cal. between the two upper teeth, and gradually splits it down the back.

2. **E. ovalifolia,** *Roxb. Hort. Beng.* 53 (1814). **Yak-erabadu,** *S.*
E. picta, Moon Cat. 52 (? L.). Thw. Enum. 89. C. P. 3499.
Fl. B. Ind. ii. 189. Wight, Ic. t. 247.

A moderate-sized tree with wide-spreading branches, trunk covered with large pyramidal, corky, prickle-tipped thorns, young branches as in last, but prickles brown, smaller and sharper; buds pubescent; l.-rachis 4–5 in., glabrous, stip. small, roundish, adpressed to rachis, soon disappearing, lflts. $3\frac{1}{2}$–$4\frac{1}{2}$ in., broadly oval, on swollen stalks readily disarticulating, obtuse, glabrous on both sides, silvery-white beneath, stipels wart-like, persistent; fl. rather large, arranged as in *E. indica*, with 2 small ovate bracts immediately beneath cal., cal. campanulate completely closed and ending in a curved beak in bud, afterwards splitting irregularly into several unequal divisions, pod 6–10 in., shortly stalked, with a sharp beak, curved, more or less torulose, very finely but densely downy, 6–10-seeded with partitions between them; seed $\frac{3}{4}$ in., oblong, cylindrical, truncate at ends, black.

Low country, by the banks of rivers and streams; rather common. Fl. January; standard dark crimson, wings and keel purple.

Also in E. Bengal, Burma, Malaya, and Polynesia.

[*E. suberosa*, Roxb., is given for Ceylon in Fl. B. Ind. ii. 190, but I do not know on what authority. There are no specimens at Kew from Ceylon.]

E. lithosperma, Bl., from Java ('Dadap' of the Malays); *E. umbrosa*, H. B. K., from Central America ('Madre de Cacao'); and *E. velutina*, Willd., of the W. Indies are all frequently met with on estates, especially of Cacao, planted as shade-trees.

28. STRONGYLODON, *Vog.*

Herbaceous twiner, l. pinnately 3-foliolate, with stipels, fl. in lax racemes; cal. campanulate with very short rounded im-

bricate segm.; standard nearly 3 times as long as wings, keel longer than wings, prolonged into a beak; stam. diadelphous, anth. uniform; ovary stalked, style beardless, stigma capitate; pod ovoid, beaked, stalked, turgid, indehiscent; seeds 1 or 2, large, with a carunculate hilum extending more than half way round the margin.—Sp. 3; 1 in *Fl. B. Ind.*

S. ruber, *Vogel in Linnæa*, x. 585 (1836).
Thw. Enum. 89. C. P. 1465.
Fl. B. Ind. ii. 191. A. Gray, Bot. Amer. Expl. Exp. t. 48.

A herbaceous twiner, stems much branched, glabrous; l.-rachis 2½–4 in., slender, stip. small, triangular, lflts. stalked, 2½–4 in., ovate-lanceolate, acuminate, apiculate, glabrous on both sides, thin, stipels linear; fl. about 1 in. long, on slender spreading ped. ½–¾ in. long, numerous, forming a lax pyramidal raceme 3–5 in. long at end of long stout axillary peduncles, bracts small, orbicular, one at base of ped. and 2 immediately beneath fl.; cal. glabrous, gibbous at base above; pod rather long-stalked, about 3 in., ovoid, inflated, with a sharp curved beak and compressed margin, papery, yellow; seeds 1 or 2, 1 in., globular-ovoid, slightly compressed, smooth, black, caruncle prominent, wing-like, red.

Low country in intermediate region; very rare. Galagedara (Gardner); Kurunegala (Thwaites). Fl. June; reddish-pink.
Elsewhere found only in the Polynesian Islands, and recently in S. Andaman I.

29. GALACTIA, *P. Br.*

Very slender twining herbs, l. pinnately 3-foliolate, with stipels, fl. small, in lax racemes with very slightly tumid nodes; cal. with short campanulate tube and linear segm., the 2 upper completely connate, the lowest largest; pet. nearly equal; keel nearly straight; stam. diadelphous; style beardless, stigma capitate, pod linear, flat, recurved.—Sp. 45; 2 in *Fl. B. Ind.*

G. tenuiflora, *W. and A. Prod.* 206 (1834).
Glycine tenuiflora, Willd., Moon Cat. 53. Thw. Enum. 88. C. P. 1468.
Fl. B. Ind. ii. 192.

A herbaceous twiner, stems filiform, with scanty adpressed hairs; l.-rachis ¾–1¼ in., slender, pubescent, stip. minute, lflts. small, 1–1¾ in., lanceolate or oval-lanceolate, subacute, apiculate, glabrous above, paler and silky-pubescent beneath; fl. small, few, shortly stalked, at end of very slender, lax, pubescent axillary racemes, bracts small, caducous; cal. slightly

hairy ; pod 1½–2 in. by ¼ in. broad, slightly curved upwards, apiculate, at first silky, becoming glabrous ; seeds 6–9, small, compressed, black.

Upper zone of low country, rather common; Kotmalie ; Hantane ; Matale. Fl. pink.

Also in India, Siam, Malay Is., Australia, and E. Trop. Africa.

The nodes of the inflorescence can scarcely be said to be tumid in the Ceylon species.

[*Spatholobus Roxburghii*, Benth., is represented in Herb. Kew by specimens of Walker's (n. 1331) professing to be from Ceylon, and the plant is entered for this country in Fl. B. Ind. ii. 193. They are not further localised, and, as no one else has met with this conspicuous woody climber, some error is probable. The species, however, occurs in India and Burma ; it is figured in Wight, Ic. t. 210 (as *Butea parviflora*).]

30. **BUTEA,** *Roxb.*

An erect tree, l. pinnately 3-foliolate, with stipels, fl. large, fascicled, in racemes with swollen nodes ; cal. shallowly campanulate, segm. shallow, 2 upper connate, 3 lower equal ; pet. nearly equal, keel-pet. completely connate, much curved ; stam. diadelphous, the free fil. shorter than the rest ; pod large, flat, linear-oblong, leathery, the lower ¾ without seeds and indehiscent, the terminal ¼ containing the solitary seed and dehiscent round the edge ; seed with a small hilum.—Sp. 3 ; all in *Fl. B. Ind.*

B. frondosa, *Koen. ex Roxb. in Asiat. Researches*, iii. 469 (1792). **Gas-kéla,** *S.* **Parasu,** *T.*

Moon Cat. 52. Thw. Enum. 89. C. P. 1465.

Fl. B. Ind. ii. 194. Bedd. Fl. Sylv. t. 176. Bentl. and Trim. Med. Pl. t. 79 (from a Ceylon specimen).

A moderate-sized or small tree, with a crooked trunk and irregular branches, bark thick, rough, ash-coloured, fibrous, exfoliating in small pieces, young shoots densely pubescent ; l. large, rachis 5–8 in., slender, pubescent when young, swollen at base, stip. small, linear-lanceolate, deciduous, lflts. 4–8 in., unequal, the terminal the largest and rhomboid-orbicular, the lat. ones obovate-oval, dilated in lower half, all very obtuse, glabrous above when mature, closely and finely tomentose and with much raised reticulation beneath ; fl. large 1½–2 in., on velvety drooping ped. ¾–1 in. long, 2 or 3 together from the swollen nodes of rigid stout racemes coming off from woody tuberosities, bracts small, deciduous ; cal. finely velvety outside, lined with white silvery hair, segm. acute ; keel very deeply boat-shaped acute ; pod pendulous, 5–8 in., by about ¾ in wide, on a densely woolly stalk ¾ in. long, obtuse, thickened

at the sutures, leathery, transversely veined, densely but finely pubescent especially at end; seed $1\frac{1}{4}$ in., flat broadly oval, smooth, reddish brown.

Dry region in open country; rather rare, but locally abundant. Jaffna; Batticaloa; Bintenne; about Bibile gregariously. Moon's locality is Wellasse. Fl. July; orange-scarlet, very silvery outside with silky hair, so that the buds are white.

Also in India and Burma.

A dark red astringent juice exudes from the bark, which hardens into a brittle, ruby-coloured, resinous-looking gum, the 'Bengal Kino' of commerce. Wood whitish, soft, light, not durable.

[Moon l. c. gives also *B. superba*, Roxb., with the name 'Wel-Kéla' and the locality 'Kandy.']

31. **CANAVALIA,** *DC.*

Perennial herbs, l. pinnately 3-foliolate with stipels, fl. large, in erect racemes with large swollen nodes; cal. deeply campanulate, 2 upper segm. connate to form a rounded projecting lip, 3 lower small, equal, triangular; standard rather longer than wings, keel curved, obtuse, equalling wings; stam. monadelphous, style beardless, stigma terminal; pod large, linear or oblong, somewhat compressed, with a prominent rib on each side close to dorsal suture; seeds several, with a short linear hilum.—Sp. 12; 2 in *Fl. B. Ind.*

Lflts. oval, thin	1. C. ENSIFORMIS.
Lflts. broadly obovate, thick	2. C. OBTUSIFOLIA.

1. **C. ensiformis,** *DC. Prod.* ii. 404 (1825). **Wal-awara,** *S.* **Koli-avarai,** *T.*

Dolichos gladiatus, Jacq., and *D. rotundifolius*, Moon Cat. 53. *C. gladiata*, DC., Thw. Enum. 88. C. P. 1481.

Fl. B. Ind. ii. 196. Wight, Ic. t. 753.

A stout perennial twiner, stems long, glabrous or nearly so, young shoots pubescent; l.-rachis about 3 in., channelled above, stip. inconspicuous, deciduous, lflts. about 3 in., shortly stalked, oval, rounded at base, very shortly acuminate, apiculate, glabrous on both sides, thin, reticulately veined; fl. numerous, large, 1 in. long, on very short ped., generally in pairs from the tumid nodes of stout, curved, erect long-stalked racemes, bracts minute, caducous; cal. very finely pubescent, upper lip with 2 rounded lobes; pod shortly stalked, about 6 in., by nearly 1 in wide, straight or very slightly curved upwards, shortly pointed, smooth; seeds 8–10.

Var. *β*, **virosa,** *Baker. Dolichos virosus*, Roxb., Moon Cat. 53. *C. virosa*, W. and A., Thw. Enum. 89. C. P. 2782.

Lflts. broader, more acuminate; pod shorter and broader, 4 in. by $1\frac{1}{2}$ in wide, oblong, 5-or 6-seeded.

Dry region; rather common. Jaffna; Anuradhapura; Kekirawa; Naula. Var. β, moist low country up to 3000 ft.; common. Fl. Dec., Feb., August; bright pink or nearly white.

Throughout the Tropics, wild or cultivated.

This seems truly native in Ceylon, though the type-form is also largely grown as a pulse. The English call it the 'Sabre-bean.'

The stam. are figured as diadelphous in Wight, Ic., but I find them always monadelphous in flowers examined.

2. **C. obtusifolia,** *DC. Prod.* ii. 404 (1825). **Mudu-awara,** *S.*
Thw. Enum. 88. C. P. 1484.
Fl. B. Ind. ii. 196.

Perennial (? biennial), stems spreading, prostrate, rarely twining, glabrous, young shoots slightly silky; l. rather small, rachis $2-3\frac{1}{2}$ in., stip. small, caducous, lflts. 1–2 in. broadly obovate or roundish, quite glabrous, thick; fl. rather smaller than in the last, few, in erect racemes longer than l.; cal. pubescent; pod about 4 in., tapering at base into long stalk, $\frac{3}{4}$ in. wide, shortly beaked, nearly straight, glabrous; seeds 5 or 6, ovoid, compressed, over $\frac{1}{2}$ in., black when dry.

Sandy seashores; common. Fl. Jan., July, August; bright pink.

Throughout the Tropics.

A truly seashore plant. The flowers are sometimes white. The seeds are much eaten, boiled, at Batticaloa and elsewhere.

I doubt if the figure of Rheede, Hort. Malab. viii. t. 43, can be referred to our plant, but the species is very variable. It is possibly the original wild state of *C. ensiformis.*

32. DIOCLEA, *H. B. K.*

Woody twiner, l. pinnately 3-foliolate, with stipels; fl. moderate-sized, on short thickened branchlets of racemose panicles; cal. deeply campanulate, upper segm. connate for nearly whole length, lower ones narrow-triangular the lowest the longest; pet. about equal, keel not beaked; stam. monadelphous, the top one free below; style beardless, stigma capitate; pod large, oblong-falcate, compressed, flattened on dorsal suture with a narrow horizontal wing along each side; seed large, flat, hilum narrow, linear, extending round more than $\frac{3}{4}$ of the edge.—Sp. 16; 1 in *Fl. B. Ind.*

D. reflexa, *Hk. f. in Niger Flora*, 306 (1849).
D. Fergusonii, Thw. Enum. 412. C. P. 3817.
Fl. B. Ind. ii. 196.

A stout woody twiner, branches wide-spreading, the young ones covered with dense soft fulvous hair; l. large, rachis 3–4 in., fulvous-hairy, stip. small, roundish attached by their centre, lflts. 4–6 in., ovate or oval, rounded at base, somewhat attenuate, subacute, apiculate, glabrous above when mature, softly silky beneath; fl. about $\frac{3}{4}$ in., numerous, on short ped., 2 or 3 together on very short incurved swollen branchlets of a narrow elongated racemose panicle 12–18 in. long, bracts below ped. much longer than them, linear, recurved, bracts beneath fl. 2, small, roundish; cal. fulvous-pubescent; pod about 5 in. by 2 in. wide, slightly falcate, at first hairy, glabrous when mature; seeds 2 or 3, separated by spongy partitions. orbicular, 1–1$\frac{1}{4}$ in., much compressed, black shining.

Moist low country; very rare. About Kaduwela near Colombo, the only known locality; found by W. Ferguson in 1863. Fl. pale violet.

Also in E. Bengal, Burma, Malaya, and Trop. Africa, and America, but not in the Indian Peninsula.

The seed is very like that of a *Mucuna.*

33. PHASEOLUS, *L.*

Erect, prostrate or twining herbs, l. 3-foliolate, with stipels, fl. in axillary racemes, bracts conspicuous; cal. campanulate, 2 upper segm. connate, nearly equal or lowest one longest; keel-pet. extended into a long stiff beak curved round into a circle; stam. diadelphous, anth. uniform; style curved round with the keel, conspicuously bearded along the inner side below the very oblique stigma; pod linear, somewhat compressed or nearly cylindrical, with partitions between the numerous seeds.—Sp. 60; 15 in *Fl. B. Ind.*

Stip. attached by their base; fl. not yellow.
  Twining.
    Fl. pink . . . . 1. P. ADENANTHUS.
    Fl. violet-purple . . . . . . 2. P. GRAHAMIANUS.
  Erect; fl. red . . . . 3. P. SEMIERECTUS.
Stip. peltately attached; fl. yellow.
  Lflts. more or less 3-lobed (see also 7).
    Stip. large, oval . . . . . . 4. P. TRILOBUS.
    Stip. small, oblong. . . . . . 5. P. ACONITIFOLIUS.
  Lflts. not lobed (except sometimes 7)
    Pod with long silky hair . . . . 6. P. MAX.
    Pod with short fulvous hair . . . . 7. P. TRINERVIUS.
    Pod glabrous . . . . 8. P. CALCARATUS.

Two species are commonly cultivated in native gardens under the name of 'Dambala' or more usually the Dutch name 'Bonchi,' *P. lunatus*, L. and *P. vulgaris*, L., the former under several varieties. Both are

probably of American origin but now common throughout the Tropics, and the latter, the French or haricot bean, 'Potu-bonchi,' S., also in temperate regions.

1. **P. adenanthus,** *Meyer, Prim. Fl. Esseq.* 239 (1818). **Wal-mé,** *S.*
P. traxillensis, H. B. K., Thw. Enum. 89. C. P. 1480.
Fl. B. Ind. ii. 200. Wight, Ic. t. 34 (*P. rostratus*).

A perennial herbaceous twiner with glabrous stems; l. distant, rachis 3–4 in., stout, stip. small, oval, lflts. $2\frac{1}{2}$–$4\frac{1}{2}$ in., rhomboid-oval, subacute, apiculate, glabrous or slightly pubescent, the lat. ones dilated in lower half; fl. large, over 1 in., few, on short ped. with a large round gland at base, solitary or in pairs, closely placed at end of an axillary peduncle about as long as l., bractlets 2, immediately beneath fl., ovate, acute, striate, cal. finely pilose; keel very long, twisted into a complete spiral; pod 5–6 in. by $\frac{3}{8}$ in. wide, compressed, shortly beaked, falcately curved, glabrous; seeds 12–16, nearly circular, $\frac{1}{4}$ in., flat, black.

Moist region, up to 4000 ft.; rather common. Fl. Dec.; dark pink. Throughout the Tropics.

The flowers are very large and handsome, and the plant well worth cultivation for ornament. This may be the plant called *P. Caracalla* by Moon (Cat. 52), with the English name 'Snail-flower.'

2. **P. Grahamianus,** *W. and A. Prod.* 244 (1834).
Thw. Enum. 90. C. P. 3586.
Fl. B. Ind. ii. 201.

A perennial twining herb, with slender glabrous much-branched stems; l. small, rachis $1\frac{1}{2}$–2 in., stip. small, oval, spreading or reflexed, lflts. $1\frac{1}{4}$–2 in., rhomboid-oval, obtuse, glabrous, readily disarticulating; fl. medium-sized, on short slender ped., 1–3 together on thickened nodes, racemes longer than l.; cal. glabrous; standard very large, keel curved into a complete circle; pod $3\frac{1}{2}$ in. by $\frac{1}{6}$ in. broad, narrowly linear, beaked, slightly curved upwards at end, sutures thickened; seeds 8–10, oblong, truncate, slightly compressed.

Low country; rather rare. Batticaloa; Galle; Dambulla; Nalande. Fl. Jan. Feb.; pale bright violet-purple (not 'reddish,' as given in Fl. B. Ind.).

Also in Southern India.

3.* **P. semierectus,** *L. Mant.* i. 100 (1767).
Thw. Enum. 90. C. P. 3609.
Fl. B. Ind. ii. 201. Wight, Ic. t. 249.

An erect semi-shrubby annual, 2–3 ft. high, with few cylindrical ascending glabrous branches; l.-rachis 2–$2\frac{1}{2}$ in.,

stip. linear, subulate, persistent, lflts. $1\frac{1}{2}$–$2\frac{1}{2}$ in., oblong-ovate or oblong-lanceolate, acute, glabrous on both sides, readily disarticulating; fl. over 1 in., nearly sessile, usually in pairs distantly placed on elongated erect, rigid, spike-like racemes 12–18 in. long, bracts long, setaceous; cal. pubescent, segm. aristate shorter than tube; standard shorter than wings; pod 3–4 in. by $\frac{1}{8}$ in., nearly cylindrical, straight, sharply beaked, somewhat silvery with adpressed white hairs; seeds about 20, small, quadrate-reniform, dull dark brown.

Low country, common; a weed in waste ground. Fl. Jan., July, &c.; dull purplish-red.
Also in India, Malaya, and Trop. America.
This looks like an introduction in Ceylon.

4. **P. trilobus,** *Ait. Hort. Kew.* iii. 30 (1789). **Bin-mé,** *S.* **Narippayaru,** *T.*
Moon Cat. 52. Thw. Enum. 90. C. P. 1474 (pt.).
Fl. B. Ind. ii. 201. Wight, Ic. t. 94.

Perennial with a woody rootstock giving off very numerous, long, prostrate, wiry, slender, glabrous stems, not at all twining; l. small, rachis 1–$1\frac{1}{2}$ in., stip. peltately attached, large, oval, acute or obtuse, lflts. $\frac{1}{4}$–$\frac{3}{4}$ in., stalked, rhomboid-rotundate, obtuse, apiculate, glabrous, often 3-lobed with the middle lobe broader and spathulate; fl. small, very shortly stalked, 2 or 3 together at the end of stiff slender peduncle 2–5 in. long and much exceeding l., bracts ovate, acute; cal.-segm. short, deltoid; pod small, 1–$1\frac{1}{2}$ in., narrowly linear, slightly compressed, straight, glabrous; seeds 6–12, very small, cylindrical, truncate at ends, dark brown.

Dry region, common; also on the seashore. Fl. Feb., Sept., &c.; yellow.
Also throughout India, Malay Is., and E. Trop. Africa.
This may be cultivated as a pulse in the dry districts to a small extent.

5. **P. aconitifolius,** *Jacq. Obs. Bot.* iii. 2 (1768).
C. P. 1474 (part).
Fl. B. Ind. ii. 202. Duthie, Crops N.W. Prov. t. ii.

Annual or perennial, stems as in the last, but usually longer and copiously covered with spreading or reflexed hairs; lflts. larger, always deeply cut into 3 narrow lobes, hairy beneath, stip. small, oblong, obtuse; fl. as in *P. trilobus*, bracts lanceolate-oblong, acute, setaceous; pod 1–2 in., usually rough with few adpressed hairs; seeds 8–14, rather larger than in the last.

Dry region; rather common. Jaffna; Batticaloa; Bintenne; Kantalai; Bibile. Fl. Jan., August, &c., yellow.
Also in Peninsular India.

Dr. Thwaites did not distinguish this from *P. trilobus*, and it is scarcely separable as a species. I have never seen this in cultivation in Ceylon, but suspect it is sometimes grown in the North.

6. **P. Max,*** *L. Sp. Pl.* 725 (1753). **Mun, Mun-éta, Bu-mé,** *S.* **Chiruppayaru,** *T.*
Herm. Mus. 22. Fl. Zeyl. n. 280, Moon Cat. 52. *P. Mungo*, L., Moon Cat. 52.
Fl. B. Ind. ii. 203 (*P. Mungo*). Duthie, Crops N.W. Prov. t. 9.

An annual herb, stem erect, about 2 ft., branching, angular, clothed with spreading or deflexed hairs; l.-rachis long, hairy like the stem, stip. peltately attached near the base, ovate, acuminate, lflts. 2–3 in., ovate, acute, more or less hairy on both sides, thin, the lat. ones dilated on lower side; fl. about $\frac{1}{2}$ in. shortly stalked, 4–6 crowded at end of stout hairy peduncles shorter than l.; cal. silky, lowest segm. lanceolate; standard much broader than long, keel curved into more than a circle; pod 2–2$\frac{1}{2}$ in., linear, nearly cylindrical, shortly beaked, more or less hairy with spreading hair; seeds 8–12, small $\frac{1}{8}$–$\frac{1}{7}$ in., oblong-ovoid, truncate or blunt at ends, green or blackish.

Var. β, **radiatus,** *Baker in Fl. B. Ind.* l. c. **Ulundu,** *S.* **Uluntu,** *T.* Herm. Mus. 47. Fl. Zeyl. n. 281. *P. radiatus*, L. Sp. Pl. 725; Moon Cat. 52; Thw. Enum. 89, 412. C. P. 3622.
Dill. Hort. Elth. t. 235, f. 304. Duthie, Crops N.W. Prov. t. 10.

Larger, stems more trailing or slightly twining, usually more hairy, peduncles longer, generally exceeding l.; seeds longer, $\frac{1}{6}$ in., dark brown or black.

Commonly cultivated, and occasionally found apparently wild in the dry region. Fl. Nov.–Feb.; pale yellow.
Throughout the Tropics, but usually cultivated.
The seeds are known as 'Green Gram' and 'Black Gram' respectively; there is also a variety with yellow seeds.
P. Max is the older of Linnæus's two names, but authors usually have preferred *P. Mungo* for the collective species, and restrict *P. Max* to the black-seeded form. Very variable in habit and amount of hair. Hermann's specimens of *P. Max* have very woolly leaves.

7. **P. trinervius,** *Heyne in Wall. Cat.* n. 5603 (1828).
Thw. Enum. 90. C. P. 1476.
Fl. B. Ind. ii. 203.

A perennial twining herb, stems clothed with deflexed fulvous hair, internodes very long, l. rather large, rachis 2–3$\frac{1}{2}$ in., hairy like the stem, stip. peltately attached, oblong-lanceolate, acute, hairy, lflts. 2–3$\frac{1}{2}$ in., term. one rhomboid-oval often some-

* *Max* is the Spanish name in Mexico, as given by Hernandez.

what 3-lobed, conspicuously 3-nerved from base, lat. ones ovate or lanceolate, much dilated in lower side, all acute, silky-hairy on both sides; fl. $\frac{1}{2}$ in., very shortly stalked, in short close racemes with swollen nodes, at end of stiff hairy peduncles much exceeding l.; cal. nearly glabrous, segm. very short nearly equal; keel curved into nearly a circle; pod 2–2$\frac{3}{4}$ in., cylindrical, straight, bluntly pointed, rather densely covered with brown hair; seeds 8–12, about $\frac{1}{8}$ in., oblong-oval with truncate ends, dark brown.

Moist region, 1–4000 ft. in grassy places; common. Fl. March, Aug., Nov.; yellow.
Also in India and Malaya.

8. **P. calcaratus,** *Roxb. Hort. Beng.* 54 (1814).
Thw. Enum. 412. C. P. 1473.
Fl. B. Ind. ii. 203.

A small perennial herb, stems flexuose, prostrate at base and often rooting at nodes, or twining, with scanty reflexed hairs; l. distant, rachis 1$\frac{1}{2}$–2 in., with deflexed hairs, stip. peltately attached, linear-lanceolate, lflts. usually 1$\frac{1}{2}$–2$\frac{1}{2}$ in. (rarely 3$\frac{1}{2}$), ovate, acuminate, acute, hairy on both sides, very thin, lat. ones dilated on lower side; fl. small, $\frac{1}{4}$ in., on slender crowded ped., racemes at first very short but lengthening to 1$\frac{1}{2}$ in., at end of long slender peduncles greatly exceeding l., bracts linear, longer than cal.; glabrous, segm. triangular; pod 1$\frac{1}{2}$–2$\frac{1}{2}$ in., linear, straight, beaked, glabrous; seeds 8–12, oblong, narrower than in last

Moist region, 1–4000 ft.; common in grass. Fl. Sept.–Nov.; yellow.
Throughout India and Malaya.
Neither this nor *P. trinervius* are ever cultivated in Ceylon.

34. **VIGNA,** *Savi.*

Prostrate or twining perennial herbs, l. 3-foliolate with stipels, fl. in short axillary racemes; cal. campanulate, segm. nearly equal, upper not connate; keel either truncate or curved and beaked; pod much as in *Phaseolus;* from which this Genus is scarcely distinct.—Sp. 40–50; 10 in *Fl. B. Ind.*

Fl. yellow, keel not beaked . . . . 1. V. LUTEOLA.
Fl. pink, keel beaked . . . . 2. V. VEXILLATA.

1. **V. luteola,** *Benth. in Thw. Enum.* 90 (1859).
Dolichos luteus, Moon Cat. 53 (non Sw.). Thw. Enum. 90. C. P. 1482.
Fl. B. Ind. ii. 205. Mart. Fl. Bras. xv. t. 50, f. 2.

A perennial herb, branches trailing, prostrate, quite glabrous; l.-rachis 2–3 in., swollen at base, stip. small, lanceolate; lflts. stalked, equal, 1½–2½ in., broadly oval or somewhat obovate, narrowed at base, rounded at apex, quite glabrous; fl. about ½ in., on slender ped. longer than cal., in short racemes at end of stiff axillary peduncles usually exceeding l.; cal.-segm. short, broad; keel not beaked; pod 2–2½ in., rather broadly linear, subcylindrical, turgid, with thickened sutures, slightly curved, apiculate, glabrous or nearly so; seeds 5–8, ⅕ in., nearly globose, black.

Moist region, on or near the coast; rare. Galle (Gardner); Kalutara (Moon); Colombo. Fl. July; yellow.

Found in Bengal, Burma, and the Tropics generally.

V. Catiang, Endl., *Nil-mé* and *Li-mé*, S., *Kodippayam*, T., and its twining variety, *V. sinensis*, Endl., *Mé-karal* and *Wanduru-mé*, S., are commonly grown in native gardens. Both were known to Hermann. For figures see Duthie, Crops N.W. Prov. tt. 29, 30. The pods of *V. sinensis* are often 16 in. to 2 ft. long, the large flowers pale purple and white, and the seeds either white or pale reddish-brown.

2. **V. vexillata,** *Benth. in Thw. Enum.* 90 (1859).
Thw. Enum. 90. C. P. 2781.
Fl. B. Ind. ii. 206. Dill. Hort. Elth. t. 234, f. 302. Wight, Ic. t. 202 (*V. pulneiensis*).

A perennial herbaceous twiner, stem long, stout, glabrous, the young parts with deflexed hair; l.-rachis 1–2 in. slightly hairy, stip. small, lanceolate, acute, hairy, lflts. 1½–2½, narrowly ovate-lanceolate, rounded at base, gradually tapering to acute cuspidate apex, finely hairy on both sides; fl. large, over 1 in., on very short ped., few, crowded at end of axillary peduncles longer than l., cal. puberulous, segm. triangular with long setaceous joints; standard very large, keel obliquely curved into ¾ of a circle, beaked; pod (not seen) "3–4 in. by ¼ in., slender, thinly silky or glabrescent, 10–15 seeded."

Moist region, 1–4000 ft.; rather common. Fl. August; rose-coloured.
Cosmopolitan in the Tropics.

35. CLITORIA, *L.*

Perennial twiner, l. imparipinnate, with stipels, fl. large, axillary, solitary; cal. long tubular, segm. nearly equal; standard much exceeding other pet., keel slightly curved; stam. diadelphous; style flattened, bearded along upper side, stigma terminal; pod linear, flat, many-seeded.—Sp. 27; 5 in *Fl. B. Ind.*

C. ternatea, *L. Sp. Pl.* 753 (1753). **Nil-katarodu, Katarodu-wel,** *S.* **Karuttappu,** *T.*

Herm. Mus. 10. Burm. Thes. 100, 101. Fl. Zeyl. n. 283. Moon Cat. 53. Thw. Enum. 88. C. P. 1485.
Fl. B. Ind. ii. 208. Bot. Mag. t. 1542.

A perennial twining herb, stems long, cylindrical, with scanty adpressed hair; l. numerous, rachis $1\frac{1}{2}$–2 in. stip. very small, linear, lflts. 5 or 7 (2 or 3 pair and end one), $\frac{3}{4}$–$1\frac{1}{2}$ in., oval or oblong-oval, shortly stalked, obtuse often emarginate, glabrous above, slightly hairy beneath; fl. large, over 1 in. long, on a drooping, short, jointed axillary ped., with 2 large erect rotundate bracts immediately beneath it; cal. $\frac{3}{4}$ in., thin, nearly glabrous, segm. long-triangular, acuminate; standard very large, somewhat reflexed, bifid; pod 4–5 in. by $\frac{3}{8}$ in. wide, nearly straight, sharply beaked, with a few adpressed hairs; seeds 8–12, $\frac{1}{4}$ in., oblong-ovoid, greenish mottled with brown.

Dry region, common, and perfectly wild; in moist region usually the result of cultivation. Fl. Dec., Jan.; intensely bright blue.

Throughout the Tropics, but often cultivated.

A lovely climber; the flowers are often much larger in cultivation, and are sometimes white. A double-flowered variety also is cultivated.

Centrosœma Plumieri, Benth., is quite naturalised in the moist low country in many places, as about Colombo. It is a native of Tropical America.

Periandra Berteriana, Benth., is another weed not unfrequent about Kandy; a native of the W. Indies.

36. DOLICHOS, *L.*

Perennial twining herbs, l. 3-foliolate with stipels, fl. solitary or racemose; cal. campanulate, upper segm. connate, lower longer, nearly equal; pet. nearly equal, keel not curved into a ring, beaked or not; stam. diadelphous; style either bearded along inner side or with a tuft of hair round terminal stigma; pod more or less curved, usually much flattened, few-seeded.—Sp. 20; 6 in *Fl. B. Ind.*

Style flattened, strongly bearded along inner edge . 1. D. LABLAB.
Style filiform, not bearded on inner edge.
  Fl. yellow.
    L. not ciliate . . . . 2. D. UNIFLORUS.
    L. strongly ciliate . . . . 3. D. CILIATUS.
  Fl. crimson . . . . 4. D. FALCATUS.

1. **D. Lablab,*** *L. Sp. Pl.* 725 (1753). **Tatta-payaru, Minni,** *T.*

Herm. Mus. 60. Burm. Thes. 191. *D. albus* and *D. purpureus*, Moon Cat. 53. *Lablab vulgaris*, Savi, Thw. Enum. 90. C. P. 1470.

Fl. B. Ind. ii. 209. Wight, Ic. tt. 57, 203. Duthie, Crops N.W. Prov. tt. 34, A. and B.

A perennial twining herb (annual under cultivation), stems stout, wide-spreading, glabrous; l.-rachis 1–2 in., slender, stip. small, triangular, lflts. 1–1½ in., broadly ovate-rhomboid, broader than long, very acute, glabrous on both sides; fl. medium-sized, ped. shorter than cal., several together on short tumid branches of the racemose axillary panicles, peduncle long, stout, erect, curved, glabrous; cal. glabrous, 3 lower segm. lanceolate; standard with a horizontal thickened claw, keel with a straight beak turned up at right angles with the rest; style very large, much laterally flattened, also bent up at right angles, strongly bearded; pod 1¼–2 in., by ½–¾ wide, straight along dorsal suture, much curved along ventral edge, suddenly truncate, tipped with long deflexed beak, nearly glabrous; seeds 2 or 3, oblong-oval, compressed, hilum long, linear.

Low country; probably wild in the dry region, but much cultivated throughout the island. Fl. Jan., Feb.; reddish-purple or white.

Throughout the Tropics of the Old World.

The above description is from the apparently wild form, but the plant is extremely variable under cultivation in size and shape of pod, and colour of flowers and seed. The commonest form in the moist region (*L. cultratus*, DC.) has purplish-pink fl., a curved, linear, rather inflated tapering pod about 3 or 4 in. long, with crisped or warted sutures and white seeds. It is the green pod that is used as a vegetable, not the ripe seed. I find no recognised S. name. Hermann gives 'Hindamini,' and Moon 'Peti-dambala,' and I have had 'Pal-avarai' given me for the wild form, and 'Dambala' for the cultivated varieties.

2. **D. uniflorus,** *Lam. Encycl. Méth.* ii. 299 (1798), var. **glaber,** *Thw. ms.*

Thw. Enum. 90. C. P. 1475.

Fl. B. Ind. ii. 210 (under *D. biflorus*).

A perennial twining herb with a woody base, stems slender, with very long internodes, almost completely glabrous; l. small, distant, rachis ¾ in., slender, stip. oval, acute, ribbed, persistent, lflts. ¾–1 in., ovate-lanceolate or lanceolate, acute, quite glabrous, thin; fl. ¾ in., on very short ped., solitary, axillary, bracts acuminate as long as cal.-tube; cal. widely campanulate, slightly hairy, segm. all acuminate; pod 2¼ in. by ¼ in. wide, much flattened, somewhat curved, with a long beak, glabrous;

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* The Egyptian name.

seeds 5 or 6, small, narrowly oblong-oval, much compressed, brown.

Low country to 2000 ft.; in rocky places, rather common. Fl. Dec.–March; pale yellow.
Probably general in Eastern Tropics.
This is never cultivated in Ceylon. Whether it be rightly referred to *D. uniflorus* is doubtful; I follow Thwaites. It is certainly *D. axillaris*, E. Mey., of Mauritius and Trop. Africa.

D. biflorus, L., is an annual cultivated form of *D. uniflorus*, or an allied species, erect and very hairy. It is largely grown in S. India, and the seed is well known in Ceylon as 'Kollu' or 'Madras Gram.' It is also cultivated here in a few places in the dry region, but to a very slight extent. Moon gives it as 'cult.' (Cat. 53) under the name of *Glycine villosa.* There seems to be no published figure of this well-known pulse.

3. **D. ciliatus,** *Klein in Willd. Sp. Pl.* iii. 1049 (1800).
Thw. Enum. 90. C. P. 1469.
Fl. B. Ind. ii. 210.

A perennial twining herb with a tuberous root, stems slender, glabrous or nearly so, buds silky; l.-rachis 1–1½ in., tumid at base, hairy, stip. ovate, striate, rigid, persistent, lflts. 1–2½ in., oblong-oval, rounded at base, obtuse, apiculate; glabrous on both sides when mature, densely ciliate with white hairs on margin, veins conspicuous beneath; fl. on very short ped., 3–6 together in extremely short cymose racemes, bracts oval, striate; cal. pubescent, lower segm. lanceolate, setaceous; pod about 1½ in. by ⅔ in. wide, much compressed, slightly curved, ventral margin much curved, suddenly narrowed to curved slender beak, glabrous, slightly veiny; seeds 2–4, ⅛ in., oval, compressed, dark brown.

Dry region; rare. Elephant Pass (Gardner); Jaffna. Fl. Jan.; pale yellow.
Also in Southern India.

D. falcatus, *Klein in Willd. Sp. Pl.* iii. 1047 (1800). **Wal-dambala,** *S.*
Thw. Enum. 90. C. P. 1472.
Fl. B. Ind. ii. 211.

A small twining perennial, roots tuberous, stems very slender, slightly hairy; l. numerous, rachis 1–2 in., slender; stip. narrowly triangular, acute, lflts. very variable in size, rhomboid-ovate, acute, usually more or less 3-lobed with the lat. lobes obtuse, glabrous on both sides; fl. ¾ in., ped. as long as cal., 1–3 on slender axillary peduncles shorter than l.; cal. nearly glabrous, lower segm. short-triangular, acute; pod 2–2½ in. by ¼ in. wide, distinctly curved, with a very short point, glabrous; seeds 5 or 6, ⅛ in., oval-reniform, compressed, dark brown.

Low country to 2000 ft.; especially in the dry region. Batticaloa; Hantane; Peradeniya; Jaffna. Fl. Jan., Feb.; bright light crimson-pink (not 'yellow,' as stated in Fl. B. Ind.).
Also in India.

37. ATYLOSIA, *W. and A.*

Erect bush or twining herbs, l. 3-foliolate, lflts. without stipels, dotted beneath, fl. in axillary racemes; cal. with upper segm. completely connate, lower ones nearly equal or lowest longest; pet. persistent, keel not beaked; stam. diadelphous; pod compressed, straight, few-seeded, strongly compressed between seeds by transverse lines; seed with a small white 2-lipped aril round hilum.—Sp. 20; 16 in *Fl. B. Ind.*

Erect . . . . 1. A. CANDOLLEI.
Twining
  Cal.-segm. triangular . . . . . . 2. A. ALBICANS.
  Cal.-segm. linear acuminate
    Pod velvety . . . . 3. A. RUGOSA.
    Pod with long soft hair . . . . . 4. A. SCARABÆOIDES.

1. **A. Candollei,** *W. and A. Prod.* 257 (1834). **Et-tora,** S.
Thw. Enum. 91. C. P. 55.
Fl. B. Ind. ii. 212. Wight, Ic. t. 754.

An erect much-branched bush, 2–4 ft., branches stout furrowed, densely clothed with silky hair; l. numerous, rachis $\frac{3}{8}$–$\frac{3}{4}$ in., densely silky, stip. very small, caducous, lflts. very shortly stalked, 1-2$\frac{1}{2}$ in., linear-lanceolate, acute, finely pubescent above, densely felted with white or yellow silky tomentum beneath, thick with reticulate veins very prominent beneath, terminal one the largest; fl. rather large, over $\frac{3}{4}$ in., ped. silky, $\frac{1}{2}$ in. long, solitary or 2 articulated on top of erect short axillary peduncle, and enclosed in bud by two large rounded, silky bracts which fall before fl. open; cal. very silky, segm. linear-lanceolate, lowest longest; pod 1$\frac{1}{4}$–1$\frac{1}{2}$ in., by $\frac{3}{8}$ in. wide, straight, with a short deflexed beak, 3–5-seeded, covered with dense spreading velvety golden-brown pubescence; seeds slightly compressed, black.

Montane zone on the patanas 3–6000 ft.; very common. Fl. all the year; bright gamboge yellow, standard red on back.
Also on the Nilgiris.
An ornamental shrub, occurring (like broom or furze) gregariously on the open patanas.

2. **A. albicans,** *Benth. Plant. Jungh.* 243 (1853).
Thw. Enum. 91. C. P. 2783.
Fl. B. Ind. ii. 215.

A large twining perennial herb, stems long, much-branched, angular, finely pubescent; l. on the main stems much larger than on the lat. flowering branches, rachis (of the former) $\frac{3}{4}$–1$\frac{1}{4}$ in., divaricate, puberulous, stip. inconspicuous, lflts. $\frac{3}{4}$–1$\frac{1}{4}$ in., obovate-rotundate, obtuse, glabrous above, silvery-white with minute pubescence beneath, venation not prominent; fl. copious, $\frac{1}{2}$ in., on rather long slender ped., 4–8 in short corymbose racemes rather exceeding small l. of the lat. branchlets, often 2 from an axil, bracts roundish, soon falling; cal. puberulous, lower segm. equal, triangular, acute; pet. much exserted; pod (not seen) "1–1$\frac{1}{2}$ in., oblong-linear, beaked, 5–6-seeded."

Low country to about 2000 ft.; rare. Hantane; about Bibile. Fl. Jan.; yellow.
Also in S. India.

3. **A. rugosa,** *W. and A. Prod.* 257 (1834). **Wal-kollu,** *S.*
Thw. Enum. 91. C. P. 1441.
Fl. B. Ind. ii. 215.

A straggling semi-twining perennial herb, stems furrowed, finely woolly; l. variable in size, rachis (of the larger ones on the main stems) 1$\frac{1}{2}$–2 in., woolly, stip. ovate, obtuse, inconspicuous, lflts. 1$\frac{1}{4}$–1$\frac{1}{2}$, obovate-rotundate, usually very obtuse, softly velvety above, densely tomentose-velvety and white beneath, with prominent reticulate venation, rather thick; fl. about $\frac{1}{2}$ in., ped. pubescent, shorter than cal., 1–3 together at end of axillary peduncles about equalling l., bracts small; cal. densely pubescent, segm. lanceolate-linear, acuminate; pet. not much exserted; pod 1 in. by $\frac{1}{3}$ in wide, with a very short point, densely velvety-pubescent; 3–4-seeded.

Montane zone, on dry patana land, 3–6000 ft.; very common. Fl. Sept.; yellow.
Also in S. India.

4. **A. scarabæoides,** *Benth. Pl. Jungh.* iii. 243 (1854). **Wal-kollu,** *S.*
Herm. Mus. 6. Fl. Zeyl. n. 282. *Dolichos scarabæoides*, L. Sp. Pl. 726. Moon Cat. 53. Thw. Enum. 91. C. P. 1442.
Fl. B. Ind. ii. 215. Pluk. Phytogr., t. 52, f. 3.

Annual (?) with a suberect stem and numerous slender, cylindrical, twining pubescent branches; l. small, rachis $\frac{1}{2}$–1 in., pubescent, stip. very small, lflts. $\frac{1}{2}$–1$\frac{1}{4}$ in., oblong-lanceolate or oblong-oval, obtuse, finely velvety above, softly pubescent and grey beneath, with rather prominent venation, 3-nerved at base, thick; fl. small, $\frac{1}{4}$ in., ped. shorter than cal., 2 or 3 together on very short axillary peduncles; cal. densely hairy,

segm. linear-acuminate; pet. little exserted; pod $\frac{5}{8}$–$\frac{3}{4}$ in., by $\frac{1}{4}$ in. wide, apiculate, covered with long soft brownish hair, 4–5-seeded, very strongly lineate between the seeds.

Low country in both dry and moist regions; rather common. Fl. December; yellow.

Throughout India, Malaya, China, and Mascarene Is.

Hermann gives the Sinhalese names 'Wœl-undu' and 'Wœl-undu-wel' for this.

Cajanus indicus, Spreng. is commonly cultivated in gardens. It is 'Rata-tora,' S., 'Thavarai,' T., and 'Chick-Pea' of the English; and is n. 279 of Fl. Zeyl., figured in Burm. Thes. t. 37. It has the C. P. number 720, but is nowhere wild in Ceylon.

38. **DUNBARIA,*** *W. and A.*

Woody twiners, l. pinnately 3-foliolate, lflts. with stipels, conspicuously gland-dotted, fl. in axillary panicles; cal. with lowest segm. much longest; pet. persistent; stam. diadelphous; style beardless, stigma capitate; pod linear, more or less compressed, few-seeded, marked with lines between seeds; seed with a ring-like small aril.—Sp. 10; 7 in *Fl. B. Ind.*

Lflts. silky beneath, stip. caducous . . . . 1. D. FERRUGINEA.
Lflts. nearly glabrous beneath; stip. persistent . 2. D. HEYNEI.

1. **D. ferruginea,** *W. and A. Prod.* 258 (1834).
C. P. 3961.
Fl. B. Ind. ii. 217.

A woody twiner, with stout, cylindrical, hairy branches; l. rather large, rachis $1\frac{1}{2}$–2 in., hairy, stip. small, lflts. 2–3 in., ovate-lanceolate, very acute, glabrous above when mature, finely hairy beneath, the lat. ones dilated in lower half; fl. $\frac{1}{2}$ in., ped. slender, $\frac{1}{4}$ in., hairy, numerous, in erect axillary panicles longer than l., bracts large, ovate, caducous; cal. covered with ferrugineous hair, lowest segm. as long as tube; pod over $1\frac{1}{4}$ in. by $\frac{3}{8}$ wide, straight, with a short deflexed beak, covered with long, silky, yellowish hair; seeds 4, nearly circular, compressed, black.

Dry region; apparently very rare. Dambulla, 1868 (Thwaites); near Bibile, Uva. Fl. Jan., Feb.

Also in S. India.

2. **D. Heynei,** *W. and A. Prod.* 258 (1834).
D. oblonga, Arn. Pug. 15. Thw. Enum. 90. C. P. 1478.
Fl. B. Ind. ii. 218.

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* Dedicated to Prof. George Dunbar, of Edinburgh.

A woody twiner, with stout much-branched stems, more or less covered with spreading hair, petiole $\frac{1}{4}$–$1\frac{1}{2}$ in., hairy, stip. lanceolate, acuminate, persistent, lflts. $1\frac{1}{2}$–3 in., rhomboid-oval, acuminate, acute, glabrous or nearly so above, more or less hairy on veins beneath, thin; fl. $\frac{5}{8}$ in. or more, ped. slender, hairy, longer than cal., arranged in stalked axillary panicles exceeding l., bracts small, ovate, caducous; cal. roughly puberulous, lowest segm. very much longest; pod about 2 in. by $\frac{3}{8}$ wide, nearly straight, with a rather long beak, turgid, covered with long weak spreading glandular hair, with faintly marked lines between the seeds; seed 4 or 5, ovoid-reniform, mottled black and brown.

Low country; rather common up to 2000 ft. Fl. Jan.; purple. Also in S. India.

39. **ERIOSEMA,** *DC.*

Small erect shrub, l. 1-or 3-foliolate, fl. axillary; cal. campanulate, segm. equalling tube; keel-pet. shorter than wings; stam. diadelphous; style not bearded, stigma capitate; pod oblong, turgid; seeds 1 or 2, oblique with linear hilum.—Sp. 50; 1 in *Fl. B. Ind.*

E. chinense, *Vogel in Meyen Obs. Bot.* 31 (1843). Fl. B. Ind. ii. 219.

A small erect slightly branched shrub with a tuberous root; lflts. 1–2 in., linear-ligulate, with a few adpressed hairs above, glaucous and densely pubescent beneath, stip. linear, persistent; fl. 1 or 2, on short axillary ped.; cal. densely pilose; pet. twice length of cal., pod $\frac{3}{8}$ in., oblong, densely pubescent.

Inserted on the authority of specimens in Hb. Kew from Col. Walker, but without special locality.

Also in E. Bengal, Burma, Malacca, China, Philippines, and Trop. Australia, but not in Peninsular India.

I have never met with this, which should be searched for. The description is taken from the Fl. B. Ind. Walker's specimens are very dwarf, and look as if grown in dry patana land. It is possible they may have come from E. Bengal.

40. **RHYNCHOSIA,** *Lour.*

Twining, trailing, or rarely erect, l. pinnately 3-foliolate, lflts. usually with stipels, gland-dotted beneath, fl. in axillary racemes; cal. with upper segm. more or less connate; keel-pet. not beaked; stam. diadelphous; pod short, flattened or

turgid; seeds 1 or 2, with or without a small white aril round oblong hilum.—Sp. 80; 22 in *Fl. B. Ind.*

Seeds with a distinct aril.
  Cal.-segm. oblong, obtuse . . . . . . 1. R. RUFESCENS.
  Cal.-segm. acuminate or setaceous.
    Pod circular, 1-seeded; annual (*Nomismia*) . 2. R. NUMMULARIA.
    Pod 2-seeded; shrubs.
      Pod with a distinct partition between seeds 3. R. SUAVEOLENS.
      Pod without a partition . . . . . 4. R. CANA.
Seeds without an aril.
  Cal.-segm. oblong, obtuse (*Cyanospermum*) . 5. R. CYANOSPERMA.
  Cal.-segm. acute.
    Racemes elongated.
      Lflts. obtuse . . . . 6. R. MINIMA.
      Lflts. acute.
        Ped. very short . . . . . . 7. R. VISCOSA.
        Ped. longer than cal. . . . . 8. R. ACUTISSIMA.
    Racemes capitulate . . . . . . 9. R. DENSIFLORA.

1. **R. rufescens,** *DC. Prod.* ii. 387 (1825).
Lespedeza (?) *indica*, Spr., Arn. Pug. 14. Thw. Enum. 91. C. P. 1424. Fl. B. Ind. ii. 220. Hook. Ic. Pl. t. 189.

An erect, annual (?) herb, semi-woody below, with long, slightly twining, densely pubescent branches; l.-rachis 1–1½ in., pubescent, stip. minute, caducous, lflts. ¾–1½ in., lanceolate or oval, acute, finely silky on both sides, with raised reticulate venation beneath; fl. rather small, shortly pedicellate, 1–4, distant in very slender elongated racemes, bracts minute; cal. finely pubescent, segm. very much longer than tube, oblong, obtuse, imbricate, somewhat enlarged in fruit; pet. rather shorter than cal.; pod ¼–⅜ in., roundish with a short beak, pubescent; seed solitary, black, shining, with a succulent 2-lipped aril.

Dry region; rather rare. Batticaloa District, common (Thwaites). Fl. March; yellow.

Also in India and Java.

2. **R. nummularia,** *DC. Prod.* ii. 386 (1825).
Nomismia nummularia, W. and A., Thw. Enum. 91. C. P. 1439. Fl. B. Ind. ii. 221. Wight, Ic. t. 283.

Annual, stems long, prostrate, trailing, hairy; l. variable in size, rachis 1–3 in., pubescent, stip. small, ovate, acuminate, lflts. 1–2 in. wide, shorter than broad, truncate or very obtuse, thick, finely pilose on both sides, the lat. ones much dilated in lower half; fl. small, on short ped., 4–8 in distant pairs, racemes stalked, usually shorter than l.; cal. hairy, segm. lanceolate, acuminate; pod circular, ½ in. diam., tipped with a sharp point, strongly wrinkled with veins on both sides,

clothed with a few long hairs; seed solitary, $\frac{1}{4}$ in., with a rather large 2-lipped aril.

Low country; rare. Jaffna (Gardner); Colombo (Ferguson). Also in S. India.

R. aurea, DC., is given for Ceylon in Fl. B. Ind. on the faith of a specimen in Hb. Kew, labelled by Bentham 'Ceylon, Walker.' It is not unlikely to occur, but has not been noticed by any one else. Figured (as *Nomismia capitata*) in Wight, Ic. t. 295.

3. **R. suaveolens,** *DC. Prod.* ii. 387 (1825).
Thw. Enum. 441. C. P. 3851.
Fl. B. Ind. ii. 221.

An erect undershrub, stems covered with a fine viscous pubescence, branches numerous, spreading, slender, flexuose; l.-rachis 1–1$\frac{1}{4}$ in., slender, pubescent, stip. linear, persistent, lflts. 1$\frac{1}{2}$–2$\frac{1}{4}$ in., lanceolate or oval, acuminate, acute, very thin, finely pubescent on both sides; fl. small, on short ped., solitary or 2 at end of stiff slender peduncles shorter than l.; cal. hairy, segm. twice as long as tube, linear, setaceous; pod $\frac{5}{8}$ in. by $\frac{1}{3}$ in. wide, with a very short decurved point, finely pubescent; seeds 2 with a distinct external line between them, small, with well-marked aril.

Dry region; very rare (?). Trincomalie (Glenie).
Also in Peninsular India.

4. **R. cana,** *DC. Prod.* ii. 386 (1825).
Flemingia biflora, Moon Cat. 53. Thw. Enum. 91. C. P. 1280.
Fl. B. Ind. ii. 222.

A small erect shrub, with very numerous ascending stems with short slender lateral branches, all covered with short dense spreading hair; l. numerous, much larger on the stems than on lat. branches, rachis (of former) 1 in., hairy, stip. very small, acicular, lflts. 1–2 in., oval, acute (on lat. branches much smaller, lanceolate or linear-lanceolate), slightly pubescent above, softly velvety-pubescent, paler and with prominent reticulate venation beneath; fl. small, on short slender nodding ped., 2 together at end of peduncles shorter than l.; cal. hairy, segm. linear, setaceous, longer than tube; pod about $\frac{1}{2}$ in. by $\frac{1}{4}$ in. wide, with a minute apiculus, turgid, very finely pubescent; seeds 2 without any partition between them, ovoid, aril small.

Low country; rather common, growing gregariously. Near Kalutara; Badulla; Nilgala and Lunugala; Jaffna District. Fl. Dec.–March; yellow.
Also in Peninsular India.
Moon gives the S. name 'Gas-kollu' for this.

5. **R. cyanosperma,** *Benth. in Fl. Trop. Africa*, ii. 218 (1871).
Cylista tomentosa, Roxb., Moon Cat. 53. *Cyanospermum tomentosum* W. and A., Thw. Enum. 92. C. P. 2471.
Fl. B. Ind. ii. 222. Wight, Ill. t. 84 (*Cyanospermum*).

A stout woody twiner, with thick, very pubescent branches; l. large, rachis 1½–4 in., softly rufous-hairy, stip. inconspicuous, caducous, lflts. 2–3½ in., broadly ovate, shortly acuminate, finely velvety on both sides, venation conspicuous beneath, stipels large, setaceous, hairy; fl. rather large, ¾ in., on ped. shorter than cal., numerous, in rather lax softly pubescent, erect or ascending, stout, stalked racemes longer than l., bracts very large, ovate, acute, velvety, quickly falling; cal. large, densely covered with long soft silvery hair, segm. longer than tube, oblong, very obtuse; pet. scarcely exceeding cal., persistent; pod ½ in. by about ¼ wide, slightly exceeding cal., with a short curved point, densely velvety with pale green hair; seeds 2, with a constriction between them, broadly ovoid or subglobular, very slightly compressed, shining dark violet-blue, without an aril, remaining attached to the valves of pod after dehiscence.

Upper zone of moist and intermediate low country; rather rare. Ambagamuwa; Allagala; Hanguranketa; Etampitiya. Moon's locality is Four Korales. Fl. Jan., Feb.; pale yellowish-white.

Also in Peninsular India, E. Trop. Africa and the Mascarene Is.

Remarkable for the deep metallic blue of the seeds. Moon gives 'Hin-garadiya' as the S. name.

6. **R. minima,** *DC. Prod.* ii. 385 (1825).
Burm. Thes. 188. *Dolichos medicagineus*, Lam., Moon Cat. 53. Thw. Enum. 91. C. P. 1440.
Fl. B. Ind. ii. 223. Burm. Thes. t. 84, f. 2.

Annual, stems numerous prostrate, trailing and slightly twining, slender, much branched, slightly pubescent; l. small, rachis ½–¾ in., stip. lanceolate, setaceous, lflts. ⅜–¾ in., broadly oval or rhomboid-oval, obtuse, apiculate, glabrous above, pubescent on veins beneath and conspicuously black-dotted, terminal one often broader than long; fl. very small, ⅙ in., on very short ped., 3–6, racemes lax, slender, exceeding the l.; cal. pubescent, segm. longer than tube, lanceolate, acuminate; pod rather over ½ in., by ¼ in. wide, somewhat compressed but slightly turgid, a little curved upwards, finely puberulous, seeds 2, compressed without an aril.

Low country; common in the dry region, less so in the moist. Fl. all the year; yellow.

Found throughout the Tropics and at the Cape and in United States. Moon calls this 'Maha-wal-kollu.' Burman's description is from specimens in Hartog's collections.

7. **R. viscosa,** *DC. Prod.* ii. p. 387.
Flemingia viscosa, Moon Cat. 54 (?). *R. villosula*, Thw. Enum. 412. C. P. 3790, 3895.
Fl. B. Ind. ii. 225.

Perennial, semi-woody at base, stems stout, twining, closely set with short glandular hairs; l. rather large, rachis 2–2½ in., viscous-hairy, stip. narrowly triangular, acute, lflts. 1½–2¼ in., broadly trapezoid-ovate, truncate or subcordate at base, acute, viscous-hairy on both surfaces, thin; fl. ½ in., on very short ped., numerous, racemes close or lax, stalked, exceeding l., bracts ovate acuminate, soon falling; cal. viscous-hairy, segm. acute, upper ones connate for less than half way, lowest one much the longest; pod about 1¼ in. by ⅜ wide, narrowed at base, tapering to long point, somewhat compressed, finely puberulous, when young covered with long yellowish hair afterwards deciduous; seeds 2, nearly circular, ¼ in. diam., with a very small aril.

Low country; rare (?). Trincomalie (Glenie); Colombo (Ferguson). Fl. Jan.–March; pale yellow.
Also in India, Malaya, Trop. Africa, and Mascarene Is.

8. **R. acutissima,** *Thw. Enum.* 413 (1864).
Thw. Enum. 413. C. P. 3445.
Fl. B. Ind. ii. 226.

Perennial, branches stout, twining, covered (as in whole plant) with short, soft, fulvous hair; l. large, rachis 1½–2½ in., stip. lanceolate, deciduous, lflts. 2½–5 in. trapezoid-ovate, tapering to very long acuminate acute apex, fulvous-pubescent on both sides; fl. ½ in., ped. in pairs, rather longer than cal., racemes equal to or shorter than l., bracts lanceolate, acute, soon falling; cal. pubescent, upper segm. connate nearly to end, lowest conspicuously longest; pod not seen.

Moist region; very rare. I have only seen the C. P. specimens which were collected at 3000 ft. on Hantane in Dec. 1859. Fl. pale yellow, with red lines.
Also in Travancore.

9. **R. densiflora,** *DC. Prod.* ii. 386 (1825).
Trimen in Journ. Bot. xxiii. 144.
Fl. B. Ind. ii. 226 (not given for Ceylon).

Perennial, stems slender, twining, clothed with deflexed silvery hair; l.-rachis 1½–2 in., hairy, stip. small triangular, acute, lflts. 1½–2 in., rhomboid-ovate, acute, finely hairy on both sides, thin, conspicuously black-dotted; fl. ⅜ in., on short hairy ped., numerous, crowded in a dense, ovoid, nearly sessile, capitulate raceme, bracts linear, acuminate, hairy, persistent,

dotted with red glands, tube very short, segm. linear attenuate, two upper connate for less than half way; pod (immature) nearly $\frac{5}{8}$ in., tapering to point, clothed with long hair, gland-dotted, 2-seeded.

Dry region; very rare. As yet, only found at Tissamaharama near Hambantota.

Fl. December.

Also in Peninsular India and in W. Trop. Africa.

41. **FLEMINGIA,*** *Roxb.*

Erect shrubs, l. 1- or palmately 3-foliolate, fl. small; cal. with a short tube and long narrow segm., 2 upper not connate, lowest one the longest; pet. equal, keel obtuse or slightly beaked; stam. diadelphous, style beardless, stigma capitate; pod small, inflated, usually 2-seeded; seed without an aril.— Sp. 14; 11 in *Fl. B. Ind.*

L. unifoliolate . . . . 1. F. STROBILIFERA.
L. 3-foliolate
  Fl. in spreading panicles . . . . . 2. F. LINEATA.
  Fl. in dense racemes . . . . . . 3. F. CONGESTA.

1. **F. strobilifera,** *Br. in Ait. Hort. Kew.*, ed. 2, iv. 350 (1812). **Hampinna,** *S.*

Herm. Mus. 53. Fl. Zeyl. n. 289. *Hedysarum strobiliferum*, L. Sp. Pl. 746. Moon Cat. 54. Thw. Enum. 92. C. P. 697.

Fl. B. Ind. ii. 227. Fl. Zeyl. t. 3. Wight, Ic. t. 267.

A shrub, 4–6 ft. high, bark smooth, grey, branches densely pubescent with adpressed hair; l. 1-foliolate, petiole $\frac{1}{2}$ in., hairy, stip. small, caducous, lflts. 9–5 in., ovate, often cordate at base, acuminate, subacute, glabrous above, finely pubescent and paler beneath, with lat. veins parallel and very prominent; fl. small, on very short ped., 2–4 together in axils of and completely concealed by very large conduplicate bracts which are roundish, rather broader than long, $\frac{3}{4}$–1 in. by 1–1$\frac{1}{4}$ in., deeply cordate at base, obscurely cuspidate, membranous, reticulately veined, finely pubescent outside, arranged distichously and much overlapping on either side of a slender zigzag hairy rachis (but all turned upwards) at the end of short lateral branches; cal. pubescent; pod $\frac{1}{2}$ in. by $\frac{1}{4}$ in. wide, apiculate, densely downy, completely concealed in the persistent hooded bracts; seeds 2 or 1, small, mottled.

Low country; rather common and locally abundant. Fl. July, August; white or purple.

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* Commemorates Dr. John Fleming, F.R.S., 'Physician-General in Bengal.' Died 1815.

Also in the Himalayas, E. Bengal, Burma, Malacca, Malay Is., and Philippines.

The heads of persistent membranous pale-brown bracts are very suggestive of hop-cones or those of *Carpinus*. The plant has a first-sight resemblance to *Desmodium pulchellum*, and the fl. are arranged in much the same way. Intermediate stages between the ordinary foliage leaves and the hood-like bracts are often met with at the base of the flowering branchlets.

2. **F. lineata,** *Roxb. Hort. Beng.* 56 (1814).
Thw. Enum. 92. C. P. 1423.
Fl. B. Ind. ii. 228. Wight, Ic. t. 327.

A small erect shrub, young branches with adpressed pubescence; l. 3-foliolate, rachis about ½ in. much furrowed above, stip. conspicuous, long-acuminate, scarious, subpersistent, lflts. very shortly stalked, 1½–2 in., lanceolate-oblong, narrowed at base, subacute, glabrous above, paler and very finely silky especially on the very oblique veins beneath, rigid; fl. small, on very short ped., in small clusters, arranged in pedunculate erect spreading axillary panicles shorter than leaves, cal. puberulous, segm. linear-lanceolate; pod ½ in., oblong-ovoid, compressed, blunt, minutely apiculate, sparingly pubescent.

Dry region; rare. Batticaloa (Thwaites); N. Prov. (Gardner). Fl. Feb.

Also in India, Malaya, and N. Australia.

3. **F. congesta,** *Roxb. Hort. Beng.* 56 (1814).
Thw. Enum. 92. C. P. 2663.
Fl. B. Ind. ii. 228. Wight, Ic. t. 390.

An erect shrub, 3 or 4 ft., young branches angular, adpressed-hairy, l. 3-foliolate, large, rachis 3–4 in., sulcate above, stip. caducous, lflts. on short densely hairy stalks, 5–7 in., narrowly rhomboid-lanceolate, rounded at base, tapering to long acute apex, glabrous above, sparingly adpressed-hairy beneath; fl. on very short ped., crowded in dense, oblong, sessile racemes often 2 or 3 from same axil, rachis silky, bracts small, lanceolate, acuminate, silky, soon falling; cal. densely adpressed-hairy, segm. linear-setaceous; pod ⅜ in., oblong-ovoid, blunt, inflated, apiculate, very finely pubescent.

Var. β, **semialata,** *Baker*. *F. semialata*, Roxb., Moon Cat. 54; Thw. Enum. 92. C. P. 256, 3584. Wight, Ic. t. 326.

Rachis margined with a narrow leafy wing; racemes elongated.

Low country; rather common. The type in Ambagamuwa, near the Maskeliya River. Var. β, Colombo; Badulla; Batticaloa. Fl. Feb., March; pale pink.

Also in India, Malaya, Philippines, China.

Moon gives 'Wal-undu' as the S. name. C. P. 3584, which has the leaves narrower, obtuse and densely pubescent beneath, is probably the variety *Wightiana* of Fl. B. Ind.

42. DALBERGIA, *L. f.*

Trees or climbing shrubs, l. pinnate, with alternate lflts., fl. small, in axillary panicles; cal.-tube campanulate, segm. short, the upper 2 not connate; keel-pet. connate at top only; stam. 9, monadelphous, or 10 in two bundles of 5; style short, stigma capitate; pod indehiscent, much compressed, usually thin, 1–4-seeded.—Sp. 60–70; 28 in *Fl. B. Ind.*

Stam. 9, monadelphous; climber . . . . 1. D. CHAMPIONII.
Stam. 10, in 2 bundles of 5 each
  Tree, pod straight . . . . . . 2. D. LANCEOLARIA.
  Climber, pod falcate . . . . . 3. D. MONOSPERMA.

1. **D. Championii,** *Thw. Enum.* 94 (1859). **Bambara-wel,** *S.*
C. P. 761.
Fl. B. Ind. ii. 232.

A scandent shrub, climbing by means of hooked lateral twigs, bark light brown, young parts clothed with very fine yellow pubescence; l. rather large, rachis $1\frac{1}{2}$–3 in., cylindrical, glabrous, stip. small, oblong, obtuse, falling before l. expand, lflts. 1–4, on stout wrinkled stalks, oval, caudate-acuminate, quite glabrous on both sides; fl. rather small, $\frac{3}{8}$ in., on slender ped. nearly as long as cal., panicles shorter than l.; cal. very finely pubescent, upper segm. very short, broad, obtuse, lower acute, pet. with very long claws; stam. 9, monadelphous; pod distinctly stalked, $2\frac{1}{2}$–$2\frac{3}{4}$ in., by $\frac{3}{4}$ in. wide, straight, very flat, obtuse, finely pubescent, with reticulate venation over seed; seed solitary, $1\frac{1}{4}$ in., oblong, much flattened.

Moist region, 2000–4000 ft.; rather rare. Deltota; Hantane; Dolosbagie; Ella. Fl. April, May; white.

Found also in Borneo.

If *D. pseudo-Sissoo*, Miq., of Java, should prove to be the same plant, that name has priority over Thwaites'.

D. latifolia, Roxb., has occurred in one or two places, but I do not think it wild. Trees have been grown for very many years in the Botanic Gardens, and seedlings distributed. It is figured in Wight, Ic. t. 1156, and Bedd. Fl. Sylv. t. 24.

2. **D. lanceolaria,** *L. f. Suppl. Pl.* 316 (1781). **Veluruvai,** *T.*
D. zeylanica, Roxb. Hort. Beng. 53. *D. frondosa*, Roxb., Thw. Enum. 94; Trim. Syst. Cat. 27. C. P. 1496.
Fl. B. Ind. ii. 235. Wight, Ic. t. 266.

A large tree, bark smooth, greyish-white, young shoots glabrous; l. rather large, rachis 5–7 in., slender, stip. minute, soon falling, lflts. 10–15, on stalks $\frac{1}{8}$–$\frac{1}{4}$ in. long, 1–1$\frac{1}{2}$ in., obovate-oval, acute at base, emarginate, glabrous above, whitish or glaucous beneath with a very fine mealy puberulence, lat. veins very oblique, numerous, parallel, conspicuous; fl. small, $\frac{3}{8}$ in., panicles short, very numerous from axils of young l., ped. shorter than cal., cal. hairy, segm. lanceolate, subacute, the lowest conspicuously longest; stam. in two bundles of 5 each; pod 2$\frac{1}{2}$ in. by $\frac{1}{2}$ in. wide, straight, long-stalked, tapering to acute apex and gradually to base, thin and flexible, nearly glabrous, reticulate-veined over seeds; seeds 1–4, $\frac{1}{4}$–$\frac{3}{8}$ in., oval, compressed.

Low country, chiefly in the dry region; rather rare. Jaffna; Elephant Pass; Vavuniya; Mulliativu; Trincomalie; Deltota. Fl. May–Aug.; pale violet, cal. brownish-purple.

Also throughout Peninsular India.

A beautiful tree when profusely covered with flowers and young leaves. Koenig's full description of the Ceylon plant in 'Supp. Pl.' does not quite agree with ours, but his Indian specimens (from Tranquebar) in Mus. Brit. are certainly the same species. The specific name applies to the shape of the pod.

D. zeylanica, Roxb., sent to the Calcutta Bot. Garden by Gen. Hay Macdowall in 1801 under the Sinhalese name 'Belloo-labba,' is very briefly described in Fl. B. Ind. iii. 228, but is probably this.

D. volubilis, Roxb., is recorded from Ceylon in Fl. B. Ind. ii. 235, on the faith of specimens in Hb. Kew, collected by Mrs. Walker, but there is no other record. Should be looked for; figured in Roxb. Pl. Cor. t. 191.

3. **D. monosperma,** *Dalz. in Kew Journ. Bot.* ii. 36 (1850).
Thw. Enum. 94. C. P. 243.
Fl. B. Ind. ii. 237.

A stout scandent shrub, scrambling by means of its divaricate lateral twigs often hooked at the ends, bark purplish-black, smooth; l. closely placed, rachis 1$\frac{1}{2}$–2$\frac{1}{2}$ in., cylindrical, nearly glabrous, lflts. 4–6, shortly stalked, 1$\frac{1}{4}$–1$\frac{1}{2}$ in., oval or obovate-oval, obtuse, often emarginate, generally acute at base, glabrous above, paler and very finely pubescent beneath; fl. small, under $\frac{1}{2}$ in., ped shorter than cal., panicles very short, under 1 in., crowded, bracts beneath cal. oval, obtuse; cal. nearly glabrous, segm. short, obtuse; stam. in two bundles of 5; pod 1 in. by $\frac{3}{8}$ in. wide, very shortly stalked, falcately curved, acute, glabrous, 1-seeded.

Near the seacoast, especially in Mangrove swamps, scrambling over bushes; rather rare. Panadure; Trincomalie; Koddiyar. Fl. Aug.–Nov.; dull pink.

Also on shores of India, Malaya, Philippines, N. Australia, and China.

43. PTEROCARPUS, *L.*

Tree, l. pinnate with alternate lflts., without stip., fl. moderate-sized in terminal panicles; cal. urceolate, curved, with very short equal segm.; pet. with long claws, margins crisped, keel-pet. very slightly coherent; stam. 10, monadelphous, fil. unequal; ov. with 2 ovules, stigma terminal, pod indehiscent, stalked, flat, broadly winged, 1-seeded.—Sp. 15; 4 in *Fl. B. Ind.*

P. Marsupium, *Roxb. Cor. Pl.* ii. 9 (1798). **Gammalu,** *S.* **Venkai,** *T.*

P. bilobus, Roxb., Moon Cat. 52. Thw. Enum. 92. C. P. 1495.
Fl. B. Ind. ii. 239. Bedd. Fl. Sylv. t. 21. Bentl. and Trim. Med. Pl. t. 81 (from a Ceylon specimen).

A tree with a stout crooked stem and wide-spreading branches, bark thick, yellowish-grey, young parts glabrous; l. large, rachis 3–4 in., cylindrical, thickened at base, glabrous, lflts. 4–6, alternate, on $\frac{1}{4}$–$\frac{1}{2}$ in. stalks, $2\frac{1}{2}$–$3\frac{1}{2}$ in., acute at base, more or less bilobed at apex, glabrous on both sides, shining above, thick, lat. veins very numerous, parallel and prominent; fl. $\frac{5}{8}$ in., articulated on short ped., panicles 3–6 in., rather lax, bracts beneath cal. small, deciduous; cal. finely velvety-pilose, segm. broadly triangular; pod indehiscent, nearly circular, about 1 in. diam., very much curved upwards, the small beaked apex being almost in contact with the base, surrounded by a very broad, rigid undulate veined wing, glabrous; seed small, kidney-shaped.

Low country, chiefly in the dry and intermediate regions up to 3000 ft., rather common; in the moist region on open grass land, rarer. Common about Navalapitiya. Fl. July–Sept.; bright yellow.

Also in Southern India.

Good specimens are in Brit. Mus. collected by Kœnig in 1781.

A dark red gum-resin (Kino) exudes from the bark, and is used as a medicine and for outward application. Affords a fine timber, very hard, heavy, dark reddish-brown, durable, containing a red resin.

44. PONGAMIA,* *Vent.*

Tree, l. imparipinnate, fl. in axillary racemes; cal. campanulate, almost truncate at mouth; pet. much exserted, standard very broad, keel-pet. coherent near tip; stam. 10, monadelphous, but the uppermost one free for half way down; stigma

* From *Pongam*, the name given in Rheede, Hort. Malab. for the tree.

capitate; pod woody, indehiscent, much compressed, not winged, 1-seeded.—Monotypic.

P. glabra, *Vent. Jard. Malm.* t. 28 (1803). **Magul-karanda,** *S.* **Punku,** *T.*

Dalbergia arborea, Willd., Moon Cat. 51. Thw. Enum. 92. C.P. 1489. Fl. B. Ind. ii. 240. Wight, Ic. t. 59. Bedd. Fl. Sylv. t. 177.

A large tree, bark soft, grey, not cracked or furrowed, buds slightly puberulous; l. large, rachis about 5 in., glabrous, stip. small, oblong, obtuse, soon falling, lflts. 5–9 (2–4 pairs and an end one), 3–5 in., on thick stalks, oval or lanceolate, acute at base, acuminate, glabrous and shining on both sides, thin, bright green; fl. ⅝ in., ped. rather long, slender, swollen at base, articulated, often in pairs, racemes often 2 together, elongated, about equalling l., cal. minutely puberulous, pod about 2 in. by 1¼ in. wide, scarcely stalked, pointed, oval-oblong, glabrous.

Low country, banks of streams and rivers, especially near the coast; common. Fl. April; greenish-pink or white, with cal. purplish-brown.

Throughout Tropical Asia, and in Seychelles.

Wood moderately hard, yellowish-white, not durable. The seeds afford an oil which is used in skin diseases.

45. DERRIS, *Lour.*

Climbing shrubs, l. imparipinnate, lflts. without stipels, fl. very numerous, in axillary or terminal panicles or racemes; cal. shallowly campanulate, segm. very short; pet. much exserted, keel-pet. slightly connate; stam. monadelphous or diadelphous, stigma capitate; pod indehiscent, flat, with a narrow wing along dorsal suture, 1–4-seeded.—Sp. 40; 23 in *Fl. B. Ind.*

Stam. monadelphous or imperfectly diadelphous.
  Standard without calli at base; lflts. 3–9.
    Lflts. 1½–2 in.
      Fls. in clusters, in long elongated panicles . 1. D. SCANDENS.
      Fls. 2 or 3 together, in short panicles . . 2. D. PARVIFLORA.
    Lflts. 2–3 in.
      Fl. in simple racemes . . . . . . 3. D. ULIGINOSA.
      Fl. in much-branched panicles . . . . 4. D. PANICULATA.
  Standard with 2 callosities at base; lflts. 9–13 . 5. D. OBLONGA.
Stam. distinctly diadelphous . . . . . . 6. D. SINUATA.

1. **D. scandens,** *Benth. in Journ. Linn. Soc.* iv., *Suppl.* 103 (1860). **Kala-wel,** *S.* **Tekil,** *T.*

Thw. Enum. 413 and (*Brachypterum scandens,* W. and A.) 93. C. P. 1492.
Fl. B. Ind. ii. 240. Wight, Ic. t. 275 (*Brachypterum*).

A large far-reaching climber, stems smooth, dark purplish, young parts pubescent; l.-rachis about 3 in., deeply channelled, stip. small, soon falling; lflts. usually 9 (4 pair and end one) $1\frac{1}{2}$–2 in. long, on short stalks, oblong-lanceolate, acute at base, obtuse often emarginate at apex, quite glabrous when mature on both sides, rather rigid; fl. small, $\frac{3}{8}$ in., very numerous, on rather long slender ped., with 2 very small obtuse bracts just below cal., arranged in clusters on the very short nodular branches of elongated narrow, pendulous, terminal and axillary racemose panicles 10–18 in. long; cal. finely pubescent; stam. monadelphous; pod $1\frac{3}{4}$–$2\frac{1}{2}$ in., by about $\frac{1}{2}$ in. wide, oblong-lanceolate, tapering to both ends, pointed, straight, very finely hairy, 1–3-seeded.

Dry region; very common. Fl. Aug.–Sept.; white.

Also in India, Burma, Malaya, Trop. Australia, and China.

Very beautiful in the driest season when little else is in blossom in the dry forest country; its great masses of pure white flowers drooping from the tops of the trees.

2. **D. parviflora,** *Benth. in Journ. Linn. Soc.* iv., *Suppl.* 105 (1860). Thw. Enum. 413 and (*Brachypterum elegans*, Thw.) 93. C. P. 2508.
Fl. B. Ind. ii. 240.

A climbing shrub, perfectly glabrous throughout; l.-rachis 3–4 in., lflts. usually 7 (3 pair and end one), $1\frac{1}{2}$–2 in., acute at base, shortly acuminate, quite glabrous, paler beneath and when young very finely reticulate; fl. as in *D. scandens*, but only 2 or 3 on each node and with panicles much shorter, scarcely as long as l. and more branched; cal. quite glabrous, segm. acute; pod $1\frac{1}{2}$–$2\frac{3}{4}$ in., by scarcely $\frac{1}{2}$ in. wide, narrowly oblong, obtuse at both ends, glabrous, 1–3-seeded.

Low country, principally in the dry region; rather rare. Deltota; Uma-oya; near Tirapane, N.C. Province. Fl. June–August, pale purple.

Endemic.

The specific name is unfortunate, as the flowers are as large as in *D. scandens*, but Thwaites' one is preoccupied by *D. elegans*, Benth. of Burma. The young leaves turn black in drying.

[*D. robusta*, Benth. (*Dalbergia Krowee*, Roxb.) is given for Ceylon in Fl. B. Ind., and has been sent from here by many collectors (Gardner, Walker, Macrae, &c.). It is a large tree, not a climber, and has long been cultivated in the Bot. Gardens, &c., but has no claim to be considered a native. Wight, Ic. t. 244.]

3. **D. uliginosa,** *Benth. Pl. Jungh.*, 3, 252 (1854). **Kala-wel,** *S.* Herm. Mus. 21. Fl. Zeyl. n. 417. Thw. Enum. 92. C. P. 1494.
Fl. B. Ind. ii. 241. Hook. Bot. Misc. iii. t. Suppl. 41 (*Pongamia triphylla*).

A strong woody climber, bark dark grey, with large, scattered lenticels; l. rather large, rachis 3–4 in., lflts. 3–7 (1–3

pair and end one), $1\frac{1}{2}$–3 in., oval or ovate-oval, rounded at base, obtusely acuminate, quite glabrous, rather thick, minutely reticulate; fl. on short ped., arranged in simple axillary racemes often from the old wood and 4–6 in. long; cal. finely pilose, truncate with obscure segm., stam. monadelphous or diadelphous; pod rather over 1 in., as broad as long, nearly circular, shortly apiculate, glabrous, veined; seed solitary, $\frac{1}{2}$ in., kidney-shaped, compressed.

Low country near the seacoast, chiefly in the dry region; common. Fl. March, August; pink.

Found also in India, China, Polynesia, Trop. Australia, E. Trop. Africa, and Madagascar.

Though included in his Fl. Zeyl., where he referred it to the genus *Pterocarpus*, Linnæus never subsequently named this species; he has confused all subsequent writers by having quoted for it an old figure and description of a Trop. American plant, *Pterocarpus Draco*.

Hermann notices the use of this plant as a fish-poison, for which the roots are still employed. The leaves turn yellow in drying. Ropes and fishing-lines are made of the strong fibre from the stem.

4. **D. paniculata,** *Benth. in Journ. Linn. Soc.* iv., *Suppl.* 105 (1860).
Brachypterum Benthamii, Thw. Enum. 93. *D. Benthamii*, Thw. Enum. 412. C. P. 2925.
Fl. B. Ind. ii. 242.

A woody climber, with slender dark-coloured lenticellate branches, young parts with fine fulvous pubescence; l-rachis 3–4 in., cylindrical, stiff, lflts. 3–7, 1–3 in., stalked, lanceolate-oblong, obtuse, acuminate, twisted at apex, rounded at base, glabrous, coriaceous; fl. numerous, ped. about as long as cal., panicles terminal, 4–8 in. long, much-branched, drooping, fulvous-pubescent; cal. pubescent, upper segm. absent, lower triangular, obtuse, stam. monadelphous but the uppermost partially free; pod 1–$1\frac{3}{4}$ in., oblong, compressed, apiculate, finely fulvous-tomentose, 1–2-seeded.

Dry region; very rare. Uma-oya (Thwaites). It was also collected by Walker, but the locality is not known. Fl. July; very pale pink, cal. red.

Endemic.

5. **D. oblonga,** *Benth. in Journ. Linn. Soc.* iv., *Suppl.* 112 (1860). [PLATE XXIX.]
Thw. Enum. 413 and (*D. ovalifolia*, Benth. var.) 92. C. P. 1493.
Fl. B. Ind. ii. 242.

A strong woody climber, bark dark grey, smooth, with large distant lenticels, young parts puberulous; l. large, rachis 4–6 in., glabrous, lflts. 9–13 (4–6 pair and end one), stalked, 2–$2\frac{3}{4}$ in., lanceolate-oblong, acute at base, obtuse often emarginate at apex, glabrous, paler beneath, stip. conspicuous with

young l., rotundate, adnate to stem, covered with orange pubescence; fl. fully $\frac{1}{2}$ in., ped. as long as cal., racemes numerous, sessile, coming from the base of the shoots below the young l., 3–4 in. long; cal. slightly pilose, upper segm. nearly absent, lower ones shallow, broadly triangular; standard with 2 callosities at base; stam. monadelphous but upper one partly free; pod $1\frac{1}{2}$–2 in. by over $\frac{3}{4}$ in. wide, much compressed, acutely pointed, glabrous, 1-seeded.

Moist region, 2000–4000 ft.; rare. Sabaragamuwa; Kitulgala; Hantane. Fl. March; white, tipped with pink, or all pale violet-pink, cal. coppery-pink.

Also in Western India.

A very ornamental climber; the young leaves, twigs, &c., are of the same coppery-pink colour as the calyx.

6. **D. sinuata,** *Benth. in Thw. Enum.* 93 (1859).
Herm. Mus. 16. Fl. Zeyl. n. 164. *Sophora heptaphylla*, L. Sp. Pl. 373 (non Auct. post.). Thw. Enum. 93. C. P. 1491.
Fl. B. Ind. ii. 246.

A large scandent shrub with pale bark; l.-rachis 4–7 in. smooth, lflts. 7 (3 pair and end one), on thick petioles $\frac{1}{4}$ in. long, about 3 in., oval or lanceolate, rounded at base, obtuse and emarginate at apex, somewhat conduplicate, perfectly glabrous, coriaceous; fl. $\frac{1}{2}$ in., articulated on hairy ped. shorter than cal., panicles large elongated terminal; cal. pilose, nearly truncate; standard without callosities at base; stam. distinctly diadelphous; pod $2\frac{1}{2}$–5 in. by 1 in. wide, tapering to base, usually beaked, glabrous, shining, veined, 1–4-seeded, often contracted at the places where seeds have not developed.

Low country, chiefly on the coast; rather rare. Colombo; Kalutara; Wéligama; Batticaloa. Fl. Feb., September; pale pink.

Also in Malaya.

Hermann's excellent specimens, which are in flower but without fruit, show Linnæus' *Sophora heptaphylla* to be this; but in his later books Linnæus has quoted Rumph. Amboin. iv. t. 22 (which looks like a true *Sophora*), and has thus confused subsequent writers (see under *Sophora zeylanica*).

Hermann gives the name 'Radaliya' for this, which belongs rightly to *Connarus monocarpus*.

46. SOPHORA, *L.*

Trees or shrubs, l. imparipinnate, lflts. without stipels, fl. numerous in terminal or leaf-opposed racemes; cal. campanulate or cup-shaped, oblique, more or less truncate with very short segm.; pet. about equal, with long claws, keel-pet. obtuse; stam. 10, free to base or nearly so; stigma capitate;

pod moniliform, indehiscent, few-seeded.—Sp. 20; 10 in *Fl. B. Ind.*

Lflts. 15–23.
  Fl. yellow . . . . 1. S. TOMENTOSA.
  Fl. violet . . . . 2. S. VIOLACEA.
Lflts. 7–11; fl. white . . . . 3. S. ZEYLANICA.

1. **S. tomentosa,** *L. Sp. Pl.* 373 (1753). **Mudu-murunga,** *S.*
Herm. Mus. 11. Fl. Zeyl. n. 163. Moon Cat. 33. Thw. Enum. 94. C. P. 1487.
Fl. B. Ind. ii. 249. Herm. Hort. Lugd.-Bat. t. 171.

A small tree, the branches and whole plant covered with short, soft, grey velvety pubescence; l. large, shortly stalked, rachis 4–7 in., cylindrical, tumid at base, lflts. 15–17 (7 or 8 pair and end one) often alternate, shortly stalked, 1–1½ in., broadly oval, obtuse and rounded at both ends, the margin somewhat reflexed, rather thick, the lower surface with more dense pubescence; fl. rather large ¾–1 in., ped. as long as cal., jointed near the top, rather closely arranged in stout, erect stalked racemes about 6 in. long, bracts acicular, shorter than ped., deciduous; cal. somewhat inflated, densely velvety, segm. very small, tooth-like; pod long-stalked, 2–6 in., moniliform, the joints separated by narrow necks as long as themselves, sharply pointed, covered with velvety down; seeds 1–8, ⅜ in. diam., nearly globular, pale brown.

On the seashore; rather rare. Bentota; Galle; Batticaloa; Jaffna. Fl. July, Aug.; sulphur-yellow.
On Tropical shores throughout the world.

2. **S. violacea,** *Thw. Enum.* 94 (1859).
C. P. 3546.
Fl. B. Ind. ii. 249.

A small undershrub, bark pale yellowish-grey, young parts finely pubescent, l. numerous, closely placed, spreading, rachis 5–8 in., slender, cylindrical, nearly glabrous, lflts. 17–23 (8–11 pair and end one) very shortly stalked, oblong-oval ¾–1 in., obtuse at both ends, glabrous, thin, glaucous beneath; fl. numerous, over ¾ in., ped. as long as cal., pubescent, racemes erect, 6–8 in., bracts minute; cal. tubular-campanulate, set. obliquely on ped., slightly pilose, segm. very shallow, rounded; pod 2–3 in., stalked, moniliform with a broad flattened neck between the joints and shorter than them, long-beaked, seeds 1–4, ovoid, compressed, red, afterwards brown.

Low country; very rare. Near Dewinuwara bet. Matara and Dikwelle, S. Prov. (Thwaites); near Trincomalie (W. Morris). Fl. April, Sept.; violet.

Endemic.

Discovered by Thwaites in 1857. A pretty plant, now much grown in Ceylon gardens.

3. **S. zeylanica,** *Trim.* [PLATE XXX.]

S. heptaphylla, Arn. Pug. 10 (non L.); Thw. Enum. 94; Trim. Syst. Cat. 27. C. P. 570.

Fl. B. Ind. ii. 250. (*S. heptaphylla.*)

A much-branched bush 10–12 ft. high, young branches finely tomentose with fulvous hair, buds densely brown-velvety; l. numerous, spreading, shortly stalked, rachis 4–6 in., narrowly furrowed above, fulvous-tomentose, stip. minute, acicular, lflts. 7–11 (3–5 pair and end one), often alternate, 1½–2½ in., ovate-oval, acuminate, obtuse, glabrous on both sides, shining above, dull and paler beneath; fl. rather small, numerous, articulated on divaricate pilose ped. about as long as cal., racemes 4–6 in., lax, spreading; cal. finely fulvous-pilose, funnel-shaped and thickened at base, above expanding into broadly cup-shaped limb, obliquely truncate, segm. very small, tooth-like; pod 1½–2 in., tapering to short stalk, strongly beaked, much constricted bet. joints, slightly compressed, thin, veiny, glabrous when mature, when young densely covered with brown silk; seeds 1 or 2, ⅜ in., broadly ovoid, bright dark red.

Montane zone, 4000–7000 ft.; rare. Hunasgiriya (Thwaites); about Nuwara Eliya. Fl. Jan., Feb.; white.

Endemic. The locality 'China' given in Fl. B. Ind. is an error, the plant there being a species of *Cladrastis* (see Hemsley in Journ. Linn. Soc. xxiii. 201).

Walker-Arnott (l. c.) seems to have been the first to apply Linnæus' name *S. heptaphylla* to this montane plant. The name belongs to *Derris sinuata* (q. v.): Hermann, of course, had no opportunity of collecting any hill species. In Fl. B. Ind. the flowers are erroneously described as yellow.

S. Wightii, Baker, of the Nilgiri Hills seems to differ chiefly in its much larger flowers; this is *S. heptaphylla*, Wight (non Arn.), figured in Ic. t. 1155.

47. **PERICOPSIS,** *Thw.*

A large tree, l. pinnate with large alternate lflts., fl. large, in terminal and axillary panicles; cal. campanulate, attenuated below, segm. deeply cut, the upper ones connate; pet. nearly equal, keel-pet. slightly coherent; stam. 10, quite free; stigma small, oblique; pod large oblong, compressed, coriaceous, indehiscent, few-seeded; seed compressed, with a very small hilum.—Monotypic and endemic.

P. Mooniana, *Thw. Enum.* 414 (1864). **Nédun,** *S.* [PLATE XXXI.]

Dalbergia lanceolaria, Moon Cat. 51 (non L. f.). *D. Mooniana,* Thw. Enum. 93. C. P 439.

Fl. B. Ind. ii. 252. Bedd. Fl. Sylv. t. 187.

A large tree with thick trunk, bark smooth, pale brownish-pink on trunk and flaking off in thin flat pieces, reddish-grey on twigs, buds slightly silky; l. large, rachis 6–10 in., cylindrical, stout, glabrous, much swollen at base, lflts. 6–8, always alternate, shortly stalked $2\frac{1}{2}$–3 in., oval, rounded at base, shortly acuminate, subacute, glabrous on both sides, shining above, rather paler beneath; fl. nearly 1 in., ped. stout, nearly as long as cal. and jointed immediately beneath it, with 2 minute bractlets, panicles broad, lax; cal. nearly glabrous, thick, tube narrowed below, segm. broadly lanceolate, acute, as long as tube; pod 3–6 in. by $1\frac{1}{2}$ in. wide, shortly stalked, pointed, flattened, coriaceous, glabrous, thickened at the sutures, veiny, usually straight, occasionally constricted at places where seed has not developed; seeds 1–6, oval, over $\frac{1}{2}$ in., flattened, smooth, pale orange-red.

Moist low country to 1000 ft., especially by river banks; formerly common, but becoming rarer. Moon's locality was Kalutara. Fl. Dec.–March; dark blackish-purple.

Endemic.

The timber is much used for household furniture, and is one of our best woods for the purpose, pale orange-brown varied with darker lines, smooth and shining, moderately hard, but easily worked. The pod is indehiscent, but ultimately breaks up into one-seeded joints.

II. CÆSALPINIEÆ.

Leaves bipinnate.
- Neither suture of pod winged . . . . 48. CÆSALPINIA.
- Both sutures winged . . . . 49. PELTOPHORUM.
- Dorsal suture only winged . . . . . 50. MEZONEURUM.

Leaves pinnate.
- Cal. without a tube.
  - Pet. 5.
    - Pod many-seeded . . . . . . 51. CASSIA.
    - Pod 1-seeded . . . . 52. CYNOMETRA.
  - Pet. 0.
    - Stam. 2 . . . . 53. DIALIUM.
    - Stam. 10 . . . . 54. CRUDIA.
- Cal. with a conspicuous tube.
  - Pet. 0 . . . . 55. SARACA.
  - Pet. 5 . . . . 56. HUMBOLDTIA.

Leaves simple, 2-lobed . . . . 57. BAUHINIA.

Our 26 species of this sub-order are all low-country plants, only one, *Cassia mimosoides*, reaching a little way up into the montane zone. *Peltophorum*, *Dialium* and *Bauhinia* are nearly confined to the dry region; *Mezoneurum*, *Crudia* and *Humboldtia* to the moist country; many species of *Cassia* are very common weeds. There are but two endemic species, *Dialium ovoideum*, and *Crudia zeylanica*.

48. CÆSALPINIA,* *L.*

Prickly woody climbers, l. abruptly bipinnate, fl. large, in terminal or axillary racemes or panicles; cal. with an expanded flattened base, segm. very deep, imbricate, the lowest much the largest and covering the bud like a hood; pet. clawed, spreading, the uppermost much the smallest; stam. 10, distinct, declinate, 5 often longer than others; pod flattened, slowly dehiscent, 1- or few-seeded.—Sp. 40; 10 in *Fl. B. Ind.*

Pod very spiny (*Guilandina*) . . . . . . 1. C. BONDUC.
Pod not spiny.
  Lflts. 2–3 pair in each pinna . . . . . . 2. C. NUGA.
  Lflts. 6–9 pair . . . . 3. C. SEPIARIA.
  Lflts. 10–12 pair . . . . 4. C. DIGYNA.

1. **C. Bonduc,** *Roxb. Hort. Beng.* 32 (1814). **Kumburu-wel,** *S.* **Punaikkalaichchi,** *T.*

Guilandina Bonduc, L., Moon Cat. 34. Thw. Enum. 94. C. P. 1524. Fl. B. Ind. ii. 255. Rumph. Herb. Amb. v. t. 48.

A stout climbing shrub, stems with fine grey pubescence and scattered usually straight small prickles; l. very large, main rachis 5–7 in., cylindrical, finely woolly-pubescent, pinnæ 6–8 pair, 1½–2½ in., spreading nearly at right angles, all with numerous hooked prickles, usually in pairs on the under surface, no stip., lflts. numerous, 10–14 (5–7 pair) to each pinna, very shortly stalked, oval or oblong-oval, rounded at base, obtuse, strongly mucronate, glabrous above, pubescent on midrib and margin beneath; fl. moderate-sized, articulated with ped., ped. as long as cal., pubescent, bracts linear, longer than cal., caducous, racemes long-stalked, pyramidal; cal. densely tomentose-pubescent; pod shortly stalked, 2½–3½ in. by 1½ in. wide, ovoid, compressed, pubescent and covered with very numerous long sharp spines, dehiscent; seeds 1–3, nearly globular, ¾ in., with a long funicle, smooth, greenish-grey.

Low country, especially near the seacoast; rather common, clambering over trees and bushes. Fl. Feb.; bright yellow.

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* Commemorates Andrea Cæsalpini of Arezzo, the founder of systematic botany. Died 1603.

Also in India, Malaya, Polynesia, and the W. Indies.
The root has a reputation as a tonic medicine.

C. Bonducella, Flem. (*Guilandina*, L.). There are specimens of this in Hermann's Herb., and it is n. 156 of Fl. Zeylan. Moon also (Cat. 34) gives it for Kalutara. It is common in nearly all Tropical countries, and probably occurs here, but I have not met with it. Distinguished from *C. Bonduc* by its smaller leaflets and the possession of stipules; and figured in Rumph. Herb. Amb. v. t. 49, and in Bentl. and Trim. Med. Pl. t. 85.

2. **C. Nuga**,* *Ait. Hort. Kew.* ed. 2, iii. 32 (1811). **Diya-wawul-étiya**, S.
Fl. Zeyl. n. 157. *C. paniculata*, Roxb., Moon Cat. 34; Thw. Enum. 95. C. P. 1525.
Fl. B. Ind. ii. 255. Wight, Ic. t. 36 (*C. paniculata*).

A large woody climber, bark rough, fibrous, yellowish-grey, young branches glabrous, dark green, distantly set with extremely sharp hooked black prickles which are persistent and become ultimately raised on a mamilliform corky base; l. large, main rachis about 5 in., pinnæ 2 pair, all smooth and polished, cylindrical, with very small, sharp, hooked prickles beneath at the insertion of the lflts., lflts. 4 rarely 6 (2 or 3 pair) distinctly stalked, distant, 2–2½ in., ovate-oval, obtuse, glabrous, paler beneath; fl. on rather long ped., racemes or panicles terminal and axillary, buds globular; cal. glabrous, segm. very obtuse; fil. hairy in lower half; pod 2¼–2½ in. by 1¼ in. wide, flattened, tapering at base to very short stalk, sharply beaked, glabrous, dark brown, leathery-woody, slowly dehiscent; seed solitary, oval-rotund, compressed, over ¾ in., smooth, purplish-brown.

Low country up to 3000 ft.; rather common. Fl. August; yellow, sweet-scented.
Also throughout the Eastern Tropics.
The specimen in Hermann's Herbarium is a very bad one, but certainly *C. Nuga*; it was first called by Linnæus *Cæsalpinia Crista* in Sp. Pl. 380, and afterwards, in Mant. ii. 378, referred to *G. Bonduc*, and he did not recognise it as his *G. Nuga*.

C. Sappan, L., *Pattangi*, S., the 'Sappan Wood,' is a very ancient introduction to Ceylon, and is frequently met with in a semi-wild state, or planted as a fence. There are specimens in Hermann's Herb. (Fl. Zeyl. n. 158), and it was formerly much cultivated as a dye-wood, and exported to a large amount, but is now little grown. It is native to India and Malaya, and is figured in Bedd. Fl. Sylv. t. 90.

C. pulcherrima, Sw. (*Poinciana*, L.), the 'Peacock-flower,' is very common in native gardens. It is found throughout the Tropics, but not known in the wild state. There are specimens in Hermann's Herb. (Fl. Zeyl. n. 159).

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* *Nugæ silvarum* is Rumphius' name for this in Herb. Amboin. v. p. 94, t. 50.

3. **C. sepiaria,** *Roxb. Hort. Beng.* 32 (1814).
Thw. Enum. 95. C. P. 3602.
Fl. B. Ind. ii. 256. Wight, Ic. t. 37 (poor).

A stout woody climber, branches finely downy with few small yellow prickles; l. large, main rachis 5–7 in. with 4–6 pair, pinnæ pubescent, with small hooked prickles beneath, lflts. 12–18 (6–9 pair), very shortly stalked, $\frac{1}{2}$–$\frac{5}{8}$ in., oblong, rounded at both ends, pilose on both sides, paler beneath; fl. large, $1\frac{1}{4}$ in., ped. 1–$1\frac{1}{4}$ in., stout, hairy, ascending, racemes terminal, large 6–12 in. long, erect, bracts long, lanceolate, acuminate, caducous; cal. finely but densely pubescent, segm. very obtuse, reflexed, pet. shortly clawed, reflexed; stam. much exserted, fil. woolly for more than lower half; pod 4 in. by $1\frac{1}{8}$ wide, not stalked, sharply beaked, pubescent with deciduous hairs, orange-brown, somewhat veiny, tardily dehiscent; seeds 6–8, oblong, $\frac{5}{8}$ in., greenish, mottled.

Var. β, **auricoma,** *Trim.*

More robust, whole plant including prickles densely covered with a velvet of soft spreading bright golden-yellow hair; l. larger 9–12 in., with 8–10 pair of pinnæ; prickles larger and more numerous.

Low country, and up to 4500 ft., especially in the dry and intermediate regions. Var. β, lower montane region to 5000 ft. Matale; Maturata; Uda Pusselawe. Fl. March, April, September; bright chrome-yellow, filaments crimson.

Also in India, Malaya, China, and Japan.

Var. β is a very handsome plant, which further examination may show to be a distinct species. I have not seen the fruit.

[*C. mimosoides*, Lam., is recorded for Ceylon in Fl. B. Ind. ii. 256, but I am not aware upon what authority. It is native to Peninsular India and Burma.]

4. **C. digyna,** *Rottl. in Neue Schrift. Naturf. Freunde Berlin*, iv. 198 (1803).
Thw. Enum. 95. C. P. 1527.
Fl. B. Ind. ii. 256. Rottl. l. c. t. 3.

A woody climber, branches glabrous, purple, with hooked brown prickles, young parts rufous-pubescent; l. narrow, main rachis 6–8 in., with 9–12 pair of pinnæ, with rachis $1\frac{1}{2}$–2 in., pubescent, lflts. 20–24 (10–12 pair), $\frac{3}{8}$ in., sessile, closely placed, overlapping, oblong, very obtuse, pubescent on both sides, thin; fl. $\frac{1}{2}$ in., ped. 1 in., horizontally divaricate, slender, racemes stalked, axillary, 6–8 in., bracts setaceous, falling very early; cal. glabrous, segm. separating from the flat base; stam. little exserted, fil. very woolly for more than basal half; pod (not seen ripe) 'oblong, rather fleshy, indehiscent, $2\frac{1}{2}$ in. by

1 in. wide, smooth, torulose, 2–4-seeded,' seeds ovoid, 'size of a large pea.'

Dry country; very rare. Kurunegala; Doluwe Kande.
Fl. September; yellow.
Also in India and Malaya.

C. coriaria, Thunb., the 'Divi-divi' tree, a native of Central America, has been long since introduced, and planted trees are now not unfrequently met with in Rest-house compounds and similar places in the dry districts and called *Vanni*, T.

49. **PELTOPHORUM,** *Vogel.*

A large tree, l. abruptly bipinnate, fl. large, in terminal and axillary panicles; cal. cut more than half way down, segm. nearly equal; pet. large, with a broad claw; stam. 10, declinate, anth. uniform; stigma large, peltate; pod very flat, thin, indehiscent, with a broad flat wing along both sutures, 1–3-seeded.—Sp. 6; 2 in *Fl. B. Ind.*

P. ferrugineum, *Benth. Fl. Austral.* ii. 279 (1864). **Iya-vakai,** *T.* [PLATE XXXII.]
Cæsalpinia Gleniei, Thw. Enum. 414. C. P. 3815.
Fl. B. Ind. ii. 257.

A very large tree, much branched above, with rather smooth grey bark, young parts covered with orange-brown velvety tomentum; l. large, main rachis 6–12 in., secondary ones 3–4 in., all swollen at base, narrowly channelled above, rusty-pubescent, stip. minute, early caducous, pinnæ 6–10 pair, spreading horizontally, lflts. 20–24 (10–12 pair), sessile, $\frac{1}{2}$–$\frac{3}{4}$ in., oblong, emarginate, unequal-sided, the upper half the larger, glabrous above, rusty-pubescent on midrib beneath, firm; fl. large, 1$\frac{1}{2}$ in., on pubescent viscous ped. shorter than cal., in large erect panicles with rusty viscous pubescence; cal.-segm. obtuse or subacute, more or less covered with ferrugineous hair, strongly reflexed, pet. with similar hair on the claw and on back, much crisped, somewhat reflexed, filaments with tufts of silky hair at base; pod 2–2$\frac{3}{4}$ in. by 1 in. wide, tapering to very short stalk and to obtuse or subacute apex, glabrous, striated with longitudinal veins, reddish-brown, wings broad sharp, rigid; seed oblong, flattened, $\frac{3}{8}$ in., smooth, yellowish-grey.

Dry region; rather rare. Trincomalie (Glenie); Batticaloa (Capt. A. M. Walker). Fl. May–September; bright dark yellow, sweet-scented.
Also found in the Andaman Is., Malacca, Singapore, Malay Islands, and N. Australia, but not in Peninsular India.
Has been much planted for ornament, and is a magnificent sight when in full blossom.

50. **MEZONEURUM,** *Desf.*

A prickly woody climber like *Cæsalpinia* in habit and fl.; lowest cal. segm. very much enlarged and hooded in bud; stigma small, capitate; pod large, thin and papery, very flat, indehiscent, with a broad papery wing along the dorsal suture; seeds few, small.—Sp. 10; 5 in *Fl. B. Ind.*

M. enneaphyllum, *W. and A. Prod.* 283 (1834). **Godawawulétiya,** *S.*
Thw. Enum. 414. C. P. 3601.
Fl. B. Ind. ii. 258. Miq. Fl. Ind. Bat. i. 1, t. ii. f. B (flower and fruit).

A climbing shrub, stems finely pubescent or glabrous, set with scattered decurved prickles, l. large, main rachis 7–12 in., cylindrical, branch-like secondary ones 1½–3 in., horizontal or deflexed, with pairs of hooked prickles beneath at the origin, pinnæ 8–12 pair, distant, lflts. 10–16 (5–8 pair) shortly stalked, oval or obovate-oblong, rounded or emarginate, glabrous or pubescent, much paler beneath; fl. ¾ in., pod ¾ in., horizontal, pubescent, in axillary or supra-axillary long-stalked racemes 6–12 in. long; cal. densely pubescent; fil. very hairy in lower half; pod 5–7 in., by 1¼–1½ wide, pendulous, not stalked, tapering to a somewhat hooked apex, very thin, the wing ½ in. wide, *i.e.*, nearly half the width of pod so as to cause the dorsal suture to look like a vein running along its centre, brilliant pinkish-crimson; seeds 3–5, very small.

Moist low country up to 2000 ft.; rather common. Fl. July–September; yellow.

Also in Burma and Malay Archipelago.

The thin, papery, crimson pods hanging in large clusters are very conspicuous.

It is possible that the above includes *M. pubescens*, Desf., which is given for Ceylon in Fl. B. Ind. ii. 259.

Parkinsonia aculeata, L., a native of Trop. America, is a not uncommon small tree in the dry districts, especially about Jaffna; usually planted, but sometimes self-sown on borders of paddy-fields, &c.

51. **CASSIA,** *L.*

Trees, shrubs or more rarely herbs, l. abruptly pinnate often with glands on the rachis, fl. usually large, in axillary racemes or terminal panicles; cal. cut almost to the base, segm. (nearly separate sep.) much imbricate; pet. usually nearly equal; stam. 10 (very rarely 5), either all perfect or more usually with the 3 upper barren, anth. opening by

pores (rarely by slits); pod various, flat or cylindrical, dehiscent or indehiscent, with partitions between the usually numerous seeds; seed with more or less abundant endosperm, embryo with flat cotyledons.—Sp. about 340; 18 in *Fl. B. Ind.*

Pod terete, very large.
  Lflts. 4–6 . . . . 1. C. FISTULA.
  Lflts. 20–30 . . . . 2. C. MARGINATA.
Pod more or less flattened.
  Three upper stam. barren.
    Petiole with one gland at base.
      Lflts. 8–10 . . . . 3. C. OCCIDENTALIS.
      Lflts. 12–20 . . . . 4. C. SOPHERA.
    Petiole with glands between one or more pairs of lflts.
      Lflts. 6 . . . . 5. C. TORA.
      Lflts. 16–24 . . . . 6. C. AURICULATA.
    Petiole without glands.
      Lflts. 8–12; pod $1\frac{1}{2}$ in. . . . . . 7. C. OBTUSA.
      Lflts. 12–20; pod 8–12 in. . . . . 8. C. SIAMEA.
      Lflts. 20–30; pod 4 in. . . . . . 9. C. TIMORIENSIS.
  All stam. perfect.
      Stam. 5; lflts. 4 . . . . 10. C. ABSUS.
      Stam. 10; lflts. very numerous.
        Gland on petiole distinctly stalked. . 11. C. KLEINII.
        Gland on petiole sessile . . . . 12. C. MIMOSOIDES.

1. **C. Fistula,*** *L. Sp. Pl.* 377 (1753). **Ehéla,** *S.* **Tirukkontai, Kavani,** *T.*

Burm. Thes. 56. Fl. Zeyl. n. 149. *Cathartocarpus Fistula*, Pers., Moon Cat. 34. Thw. Enum. 95. C. P. 1502.

Fl. B. Ind. ii. 261. Wight, Ic. t. 269 (*C. rhombifolia*). Bentl. and Trim. Med. Pl. ii. t. 87.

A small or moderate-sized tree, with a straight trunk and slender branches, bark smooth and pale grey when young, dark brown and rough when old; l. large, rachis 6–12 in., glabrous, stip. minute, setaceous, lflts. 4–12 (2–6 pair) distinctly stalked, articulated with rachis, 2–6 in., ovate, acute at base, obtusely acuminate, quite glabrous, stiff, pale yellowish-grey, veiny; fl. large $1\frac{1}{2}$–2 in., on slender glabrous spreading ped. about $1\frac{1}{2}$ in. long, in very lax long-stalked pendulous axillary racemes longer than l., bracts lanceolate, caducous; cal. glabrous, segm. concave, very obtuse; pet. concave, veined; 3 lowest stam. with very long doubly curved exserted fil. and oblong anth. dehiscing longitudinally, 4 lat. ones with short straight fil. and versatile anth. opening by pores at the base,

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* '*Cassia fistula*' was the mediæval pharmacists' name for the pods, having been transferred to them from some variety of Cinnamon Bark.

3 uppermost ones much smaller, erect, with indehiscent abortive anth.; pod 1–2 ft., pendulous, shortly stalked, cylindrical $\frac{3}{4}$–1 in. diam., nearly straight, hard, smooth, shining, purplish-black, not torulose, indehiscent, with very numerous, 25–100, horizontal seeds immersed in dark-coloured pulp and completely separated by thin transverse partitions; seed small, $\frac{1}{3}$ in., ovoid, slightly compressed, with a raised raphe down whole of one side, hard, smooth, shining, pale orange-brown, cotyledons flat, foliaceous, endosperm abundant, hard and horny.

Forests of the dry region; very common. Fl. July–August; pale yellow.

Also in India, China, and Malaya.

A conspicuous tree in the dry country whether covered with its drooping racemes of bright flowers or its pendulous black cylindrical pods.

The flowers are used in temple ceremonies; the astringent bark for tanning and as a medicine; and the pulp of the fruit is a well-known purgative. Heart-wood very hard and heavy, dark red, durable, but of no great size.

2. **C. marginata,** *Roxb. Hort. Beng.* 31 (1814). **Ratu-wa,** *S.* **Vakai,** *T.*

Cathartocarpus rosea, Moon Cat. 34. *C. Roxburghii*, DC., Thw. Enum. 95. C. P. 1505.

Fl. B. Ind. ii. 262. Wight, Ill. t. 83 (*C. Roxburghii*), copied in Bedd. Fl. Sylv. t. 80.

A small tree, with slender drooping branches, bark brown, deeply cracked longitudinally, young parts densely pubescent or tomentose; l.-rachis 6–10 in., slender, furrowed above, pubescent, stip. large, falcate, pubescent; quickly deciduous, lflts. 20–30 (10–15 pair), shortly stalked, 1–$1\frac{1}{4}$ in., oblong, obtuse, emarginate and apiculate at apex, unequal at base, glabrous above, pubescent beneath; fl. about $\frac{3}{4}$ in., on pubescent ped. $\frac{3}{8}$ in. long, in close pedunculate supra-axillary racemes much shorter than l., bracts ovate, cuspidate, soon falling; cal. densely ilky, segm. subacute; two lower pet. larger than others; 3 owest stam. with long doubly curved exserted fil. and large anth., other 7 very much shorter with smaller anth. all fertile; pod 8–12 in., cylindrical, straight, about $\frac{3}{4}$ in. diam., semi-woody, somewhat torulose, with very numerous seeds separated by partitions, glabrous, black; seed about $\frac{1}{3}$ in. compressed, pale brown, with abundant endosperm.

Dry region; very common. Fl. July, August; pink or salmon-coloured.

Also in Southern India.

Very ornamental when covered with its abundantly produced flowers. Heart-wood heavy, very hard, reddish brown, small.

3. **C. occidentalis,** *L. Sp. Pl.* 377 (1753). **Peni-tora,** *S.* **Ponnantakarai,** *T.*

C. Tagera, Moon Cat. 33 (? Linn). Thw. Enum. 95. C. P. 1262. Fl. B. Ind. ii. 262. Bot. Reg. t. 83.

A coarse annual, 1–3 ft. high, often semi-woody at base, stam. slightly branched, nearly glabrous, furrowed, purplish; l. rather large, rachis stout, 4½–6 in., glabrous, swollen at base, where on the upper side is a sessile purple gland, stip. large, semi-sagittate, acuminate, caducous, lflts. 8 or 10 (4 or 5 pair), on very short stalks, 2–4 in. (the end pair largest) narrowly ovate-lanceolate, rounded and unequal at base, gradually attenuate to very acute apex, glabrous, very thin, dark-green above, slightly glaucous beneath; fl. large, 1¼ in. or more, ped. about ½ in., usually in pairs in the leaf-axils; cal.-segm. obtuse, nearly glabrous; 7 stam. with perfect anth. opening by pores, 2 or 3 lowest longer and declinate, other 3 erect with barren anth.; pod 3½–4¼ in. by ¼ in. wide, erect, stiff, linear, slightly curved, bluntly apiculate, flattened, slightly compressed between the seeds, with thickened sutures; seeds 20–30, compressed-ovoid, pointed at one end, shining, very hard, olive-green.

Low country in waste places; a very common weed. Fl. June, March, &c.; bright orange-yellow.

Throughout the Tropics, and perhaps originally from the New World.

The colour of the flowers in Fl. B. Ind. is wrongly given as 'pale lilac.' The plant often strongly tinged with purple.

Very fetid when bruised. Both this and *C. Tora* are much used as alterative medicines.

4. **C. Sophera,*** *L. Sp. Pl.* 379 (1753). **Uru-tora,** *S.* **Takarai,** *T.*

Fl. Zeyl. n. 150. Moon Cat. 33. Thw. Enum. 97. C. P. 1507. Fl. B. Ind. ii. 262. Burm. Thes. t. 98.

A large annual, more or less woody below, stem slightly branched, glabrous, l. large, rachis 5–7 in., furrowed above, nearly glabrous, swollen at base and provided there with a large solitary gland, lflts. 12–20 (6–10 pair) closely placed, shortly stalked, 1½–2¼ in., lanceolate, rounded at base, acute, finely mucronate, thin; fl. as in the last, but 4–7 in an axillary raceme; pod about 3½ in. by ⅜ wide, nearly straight, somewhat turgid, glabrous, acute, sutures broad, thickened, with very numerous small seeds separated by partitions.

Low country, especially in the dry region; common. Fl. Feb. and March; pale yellow.

Found throughout the Tropics.

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* *Sophera,* a name taken from Prosper Alpinus, and applied by him to some Egyptian plant, perhaps this.

5. **C. Tora,** *L. Sp. Pl.* 376 (1753). **Péti-tora,** *S.* **Vaddu-takarai,** *T.*

Burm. Thes. 58. Herm. Hort. Lugd.-Bat. 557. Fl. Zeyl. n. 152. Moon Cat. 33. Thw. Enum. 96. C. P. 2785.

Fl. B. Ind. ii. 263. Dill. Hort. Elth. t. 63.

An annual herb, 1–2 ft. high, with spreading glabrous branches; l. small, numerous, long-stalked, rachis 1–2 in., stout, furrowed, slightly pubescent, with a linear yellow gland above between the lflts. of the lower one or two pair, stip. long, setaceous, lflts. 6 (3 pair), very shortly stalked, 1–1½ in., (the terminal pair largest), obovate, tapering to unequal base, apiculate, glabrous above, very finely silky beneath, thin and flaccid; fl. about ¾ in., solitary or in pairs, axillary, ped. slender, ¾ in., cal. glabrous, 2 segm. larger than others; upper pet. 2-lobed, the others entire; barren stam. minute; pod very long, 6–8 in. by less than ¼ in. wide, linear, much curved when young, afterwards less so, quadrangular (the sutures being very wide), glabrous, with about 30 seeds and very slight partitions between them, thin, pale brown; seed not compressed, pointed at one end, rather truncate at the other, very hard, rough with scurfy hair, pale brown.

Throughout the low country by roadsides and waste ground; a very common weed, especially in the dry region. Fl. Jan., August, &c.; rather pale orange-yellow.

Found throughout the Tropics.

Hermann, followed by other writers, gives the native name 'Tala' for this (Mus. 69); probably a misprint for Tora. Has a peculiar fetid scent when bruised. The seeds are sometimes eaten.

C. tomentosa, L., Thw. Enum. 95, C. P. 2410, is a Tropical American species, cultivated and naturalised about Nuwara Eliya and elsewhere in the mountains.

C. hirsuta, L., is a frequent weed about Kandy and elsewhere. It is also an introduction from Trop. America.

C. lævigata, Willd., also introduced from Trop. America, is completely naturalised, and a very common weed throughout the montane zone, in the Planting Districts.

6. **C. auriculata,** *L. Sp. Pl.* 379 (1753). **Ranawara,** *S.* **Avarai,** *T.* [Plate XXXIII.]

Herm. Mus. 56. Fl. Zeyl. n. 151. Moon Cat. 33. Thw. Enum. 96. C. P. 1503.

Fl. B. Ind. ii. 263.

A large much-branched bush, bark smooth, cinnamon-brown, branchlets closely pubescent; l. very numerous, closely placed, rachis 3½–5 in., narrowly furrowed, slender, pubescent, with an erect linear gland between the lflts. of each pair, stip. very large, reniform-rotund, produced at base on side next petiole into a filiform point, persistent, lflts. 16–24 (8–12 pair),

very shortly stalked, slightly overlapping, oval-oblong, obtuse at both ends, mucronate, glabrous or minutely downy, dull green, paler beneath; fl. large, nearly 2 in., ped. glabrous, 1 in., racemes few-flowered, short, erect, crowded in axils of upper l. so as to form a large terminal inflor. (the l., with the exception of their large stip., being suppressed at the upper nodes); cal. glabrous, segm. very unequal, concave, membranous; pet. with rather long claws, crisped on margin; pod short, 3–4½ in. by ⅝ in. wide, oblong, obtuse, tipped with long style-base, flat, thin, papery, undulately crumpled, pilose, pale brown; seeds 12–20, distant, each in a separate cavity.

Low country, especially in the dry region and near the coast; common; locally gregarious and abundant. Fl. Feb., March; bright yellow.

Also in Peninsular India.

A great ornament to the barren coast regions.

The leaves of this form 'Ceylon Tea' or 'Matara Tea,' and the infusion is drunk by the natives on several parts of the coast; when properly cured, rolled, and dried, it is very like true tea in appearance, and somewhat aromatic,* but slightly purgative. The bark is rich in tannin, and is largely employed for tanning leather in Colombo.

7. **C. obtusa,** *Roxb. Hort. Calc.* 31 (1814). **Nilavakai,** *T.*
Thw. Enum. 441. C. P. 3843.
Fl. B. Ind. ii. 264 (*C. obovata;* not given for Ceylon). Wight, Ic. t. 757. Bentl. and Trim. Med. Pl. ii. t. 89 (*C. obovata*).

Annual (or perennial?) 1–2 ft., somewhat woody below, with spreading, glabrous, angular branches; l. spreading, rachis 2–2½ in., glabrous, without glands, stip. small, linear-lanceolate, acute, rigid, persistent, lflts. 8–12 (4–6 pair), ¾–1 in., very shortly stalked often somewhat overlapping, broadly oblong or obovate-oblong, obtuse at both ends, mucronate, unequal-sided at base, glabrous or nearly so, rather stiff, pale green, glaucous beneath; fl. about ¾ in., shortly stalked, racemes stalked, erect, lax, axillary, short but lengthening with fruit and ultimately exceeding l.; cal.-segm. very obtuse, membranous, veined; perfect stam. with short fil. and unequal anth., abortive ones very small; pod 1½ in. or a little more by ⅝ wide, very shortly stalked, oblong, much curved upwards, rounded at both ends, tipped with small curved style-base, very flat, parchment-like, flexible, glabrous or nearly so, greyish-brown, veiny, with a line of prominent rounded crests on the sides over the seeds; seeds 8–10, separated by very thin partitions, on very long funicles, obovate-wedge-shaped,

* A sample cured in Jaffna, where it is called 'Suga-Seeveny,' gave on analysis (to Mr. A. C. Dixon) 3·71 per cent. of an alkaloid and 16·17 of other nitrogenous substances, with 41·14 per cent. of gum, tannin, and saccharine matters.

compressed, with a large hilum at the pointed end, endosperm scanty.

Dry region; rare. About Jaffna, frequent; Trincomalie (Glenie); Mannar (Crawford). Fl. Dec.–Jan.; yellow.

Also in desert parts of India, E. Trop. Africa, and Arabia.

One of the true medicinal sennas; I think wild at Jaffna, where, however, it is also cultivated for use as a drug.

C. alata, L., 'Rata-tora,' S., a stately handsome plant, is common by paddy-fields and other wet places in the low country. It does not anywhere here look like a native, but is found in all Tropical countries. Well worth cultivation.

8. **C. siamea,** *Lam. Encycl.* i. 648 (1783). **Wa, Aramana,** *S.* **Vakai,** T.

C. sumatrana, Roxb. Moon Cat. 33. *C. florida*, Vahl, Thw. Enum. 96. C. P. 3485.

Fl. B. Ind. ii. 264. Bedd. Fl. Sylv. t. 179.

A moderate-sized or small tree, bark grey, nearly smooth, shoots glabrous; l. rather large, spreading or deflexed, rachis 6–10 in., stout, stiff, swollen at base, shallowly channelled above, nearly glabrous, stip. caducous, lflts. 12–20 (6–10 pair), stalked, $2\frac{1}{4}$–3 in., oblong-lanceolate, rounded at both ends, tipped with minute sharp mucro, glabrous on both sides, glaucous beneath, rather thick, stiff; fl. $1\frac{1}{4}$–$1\frac{1}{2}$ in., ped. about 1 in., downy, crowded at ends of stout pedunculate axillary and terminal corymbose racemes or panicles, the whole forming together a very large pyramidal terminal inflor. 2 ft. or more long, bracts curved, linear, stiff, fleshy, much shorter than ped., cal.-segm. slightly pubescent; pet. distant, distinctly clawed; fil. of 2 of the fertile stam. twice as long as the rest; pod very long, 8–12 in. by $\frac{1}{2}$–$\frac{3}{4}$ in. wide, stalked, flat, beaked, flexible, very finely and closely pubescent, thickened at sutures, 8–15-seeded.

Low country to 2000 ft., chiefly in the moist region; common, especially near rivers and streams. Fl. March, November; rather pale yellow.

Also in India and Malaya.

Heart wood very hard, blackish-brown, durable; a beautiful and useful wood for small articles.

9. **C. timoriensis,** *DC. Prod.* ii. 499 (1825).

Thw. Enum. 96. C. P. 1504.

Fl. B. Ind. ii. 265.

A small tree, twigs pubescent; l. large, rachis 7–10 in., cylindrical, channelled above, pubescent, stip. foliaceous, broad, with a filiform tail, semi-persistent, lflts. 20–30 (10–15 pair) shortly stalked, $1\frac{1}{4}$–$1\frac{3}{4}$ in., narrowly oblong, obtuse, strongly apiculate, pubescent on both sides especially beneath; fl. $1\frac{1}{4}$ in., on $\frac{3}{4}$ in. ped. in short numerous corymbose panicles

from axils of young l., the whole forming a large terminal inflor.; cal.-segm. pubescent; pet. rather narrow, fil. of perfect stam. all very short; pod about 4 in. by ½ in. wide, very shortly stalked, pointed, very flat, the sutures not thickened, glabrous and shining, thin and flexible, 14–20-seeded with raised transverse lines marking the partitions between them, brownish-black.

Moist low country; rather rare. Heneratgoda; Sitawaka; Four Korales Dist. Fl. September; yellow.

Also found in Burma and the Malay Islands, the Philippines, and N. Australia, but not in Peninsular India.

C. glauca, Lam., I know here only as a garden plant. There are specimens from Moon (C. P. 1526) in Herb. Perad. and in his Cat. (p. 33) he gives Colombo as locality. See also Thw. Enum. 96. There are also specimens from Macrae in Herb. Kew.

Some leaves from Trincomalie, collected by Glenie in 1864, are in Herb. Perad. labelled by Thwaites '(?) *C. suffruticosa*, Koenig,' but are scarcely determinable.

10. **C. Absus,*** *L. Sp. Pl.* 376 (1753). **Bu-tora,** *S.*

Herm. Mus. 15. Burm. Thes. 212. Fl. Zeyl. n. 153. Moon Cat. 33. Thw. Enum. 96. C. P. 1506.

Fl. B. Ind. ii. 265. Burm. Thes. t. 97.

An erect annual, 6–18 in. high, with few horizontal branches densely covered with spreading glandular hair; l. small, spreading or deflexed, rachis ¾–1 in., swollen at base, covered like the stem with viscous hairs, with an erect minute linear gland between the lflts. of every pair, stip. small, linear, lflts. 4 (2 pair) very shortly stalked, closely placed at end of rachis, broadly oval or obovate-oval, unequal at base, rounded with a minute mucro at apex, glabrous above, slightly hairy but not glandular beneath, the terminal pair the larger; fl. small, a little over ½ in., on very viscous ped. longer than cal., in leaf-opposed erect racemes longer than l., cal. slightly glandular-hairy, segm. oblong; pet. with long claws, veiny; stam. 5, equal, all fertile, opening by slits not pores; ov. densely bristly; pod 1–2 in. by ¼–⅜ in. wide, nearly straight, oblique, tipped with short style-base, compressed, with long, scattered, white, bristly hairs, 6–8-seeded, with depressed lines outside at the partitions; seed trapezoid, compressed, dark brown, brilliantly shining.

Low country, especially in the dry region; common. Fl. Dec., Jan.; yellowish-pink.

Found throughout the Tropics of the Old World.

A very distinct species. Hermann gives the name 'Telamandukola' for this. The seeds are employed in medicine.

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* *Absus* is the name of Prosper Alpinus for this, probably taken from some Egyptian one.

11. **C. Kleinii,** *W. and A. Prod.* 293 (1834). **Bin-siyambala,** *S.*
Thw. Enum. 96. C. P. 1508.
Fl. B. Ind. ii. 266.

A perennial herb with a woody base, 1–3 ft. high, much-branched, spreading, rigid, glabrous or pilose; l. numerous, rachis 1–1½ in., pilose, with a small, distinctly stalked peltate gland just below lowest pair of lflts., stip. linear-acuminate, striate, acute, rigid, persistent, lflts. 16–40 (8–20 pair) sessile, crowded, overlapping, about ½ in., strongly mucronate, oblong, oblique, the midrib close to upper edge; fl. ½ in., on slender ped. ½ in. long, 1–3 in. the axils; cal.-segm. very acute; stam. 10, fil. unequal; pod 1¾–2 in. by ⅕ in. wide, slightly curved upwards, abruptly pointed, sparingly pilose especially on suture, 10–12-seeded, dark brown.

Var. β, **pilosa,** *Thw. l. c.* 97.

Branches and lflts. densely clothed with short spreading hair.

Low country, in moist and dry regions; very common. Var. β, Hantane. Fl. July, August; yellow.
Also in Peninsular India and Java.

C. pumila, L., is given for Ceylon in Fl. B. Ind. I have seen no specimens. It appears to differ from *C. Kleinii* principally in having 5 stamens instead of 10.

12. **C. mimosoides,** *L. Sp. Pl.* 379 (1753). **Bin-siyambala,** *S.*
Herm. Mus. 18. Burm. Thes. 160. Fl. Zeyl. n. 154. Moon Cat. 33. *C. angustissima*, Lam., W. and A. Prod. 292. Thw. Enum. 96. C. P. 1510.
Fl. B. Ind. ii. 266.

Annual but often woody at base, usually erect, 2–3 ft. high, with long ascending stiff pilose branches; l.-rachis 2½–3 in., very slender, curved, glabrous or hairy, with a flat, sessile gland between the lflts. of the basal pair, stip. linear, setaceous, persistent; lflts. minute, ⅙ in., sessile, very crowded and overlapping, 60–100 (30–50 pair) or more, linear, very unequal-sided, glabrous or somewhat ciliate; fl. on slender hairy ped. over ½ in. long and with 2 small bracts beneath fl., 2 or 3 together in axils; sep. acute, pilose; pod 2–2¼ in. by ⅙ in. wide, linear, slightly curved, sparingly pilose, about 20-seeded, slightly constricted at the partitions.

Var. β, **auricoma,** *Grah.* (sp.). Var. *villosula,* Thw. l. c. 96. C. P. 3603.

Whole plant sparingly covered with spreading yellow hair; lflts. larger, aristate.

Var. γ, **Wallichiana,** *Baker.* *C. Wallichiana,* DC., Thw. Enum. 6. C. P. 2786.

Stems stouter, gland on rachis more prominent but not stalked, placed rather below the lowest pair of lflts., lflts. fewer, much larger, $\frac{1}{2}$–$\frac{3}{4}$ in., aristate; pods smaller, $1\frac{1}{2}$–$1\frac{3}{4}$ in.

Low country and lower montane zone to 4000 ft. in open grassy places; common. Var. β, Hantane; Maturata. Var. γ, the commonest variety. Fl. April, August; yellow.

Found throughout the Tropics.

The leaves are very sensitive. I know of no figure of this common plant.

Var. γ, I should prefer, with Thwaites, to regard as a distinct species; it is a common weed about Kandy, and very distinct in appearance, having red-purple stems and blue-green foliage.

52. **CYNOMETRA,** *L.*

Trees, l. abruptly pinnate with 2 or 4 lflts., fl. small in axillary racemes; cal. very deeply cleft almost to base; pet. 5, equal, narrow; stam. 10, equal, spreading; ov. with 2 ovules; pod leathery-woody, indehiscent, obliquely ovoid, 1-seeded; seed large, without endosperm, cotyledons plane-convex.—Sp. 20; 5 in *Fl. B. Ind.*

C. ramiflora, *L. Sp. Pl.* 382 (1753). **Gal-mendora,** *S.* **Attukaddupuli,** *T.*

Moon Cat. 33. Thw. Enum. 97 (var. α). C. P. 3604.
Fl. B. Ind. ii. 267. Rumph. Herb. Amb. 1 t. 63.

A small or moderate-sized much-branched tree with rather smooth, brownish-grey bark, twigs slender, pendulous, young parts glabrous, l. composed of 1 pair of sessile lflts., articulated on a short thick wrinkled rachis $\frac{1}{4}$–$\frac{3}{8}$ in. long, lflts. $4\frac{1}{4}$–6 in., approximated not spreading, linear-lanceolate, very unequal-sided at base, tapering to long acuminate obtuse apex, stiff, glabrous on both sides, with rather conspicuous but not prominent venation; fl. small, on very slender ped. $\frac{1}{4}$–$\frac{3}{8}$ in. long, numerous, in short, spreading, sessile, axillary, corymbose racemes barely 1 in. long, bracts small, broad, pubescent, cal.-segment glabrous; pet. narrowly lanceolate, acute; stam. twice as long as pet., spreading; pod not seen (but see under *Crudia zeylanica*, p. 113).

Var. β, **heterophylla,** *Thw. l. c.* C. P. 1500. Bedd. Fl. Sylv. t. 315 (from Ceylon specimens).

Lflts. very variable, usually 4 (2 pair), of which the lower are much the smaller often not more than $\frac{1}{2}$ in., the upper reaching 4 in., oval, obtuse or emarginate; pod from $\frac{1}{2}$–1 in., compressed-turgid, nearly straight along dorsal suture, very gibbous on ventral, often deeper than long, shortly but distinctly beaked, very deeply rugose.

Forests of the low country, in the dry region; rare. Only seen from Uva. Var. β much commoner, and in both moist and dry regions. Fl. Jan.; white.

Found also in Peninsular India, Malay Islands, and N. Australia.

There is no specimen in Hermann's Herb., and his drawing is indeterminable.

I suspect there are here two distinct species, but I have no fruit of the type. A very small-leaved form of var. β from the coast at Puttalam and Trincomalie may be *C. mimosoides*, Wall. The young foliage of the type form is pendulous, flaccid, and white. The S. name is unfortunate, as this tree has no similarity to the true 'Mendora' trees, which are all Dipterocarps.

C. cauliflora, L., is cultivated in gardens, and is included in Linnæus' Fl. Zeyl. n. 166. It is known by its Malay name, 'Nam-nam,' and has no claim to be considered native here.

53. **DIALIUM,** *L.*

Trees, l. imparipinnate, fl. small, in terminal panicles; cal. divided nearly to base into 5 much-imbricated petaloid segm.; pet. 0; stam. 2, anth. large, extrorse; ov. with 2 ovules; pod small, indehiscent, ovoid, densely covered with velvety pubescence; seed solitary; embryo surrounded by endosperm.—Sp. 10; 5 in *Fl. B. Ind.*

D. ovoideum, *Thw. Enum.* 97 (1859). **Gal-siyambala,** *S.* **Kaddupuli,** *T.*

Thw. Enum. 97. C. P. 3149.

Fl. B. Ind. ii. 269. Bedd. Fl. Sylv. t. 181.

A tall tree, bark rather smooth, twigs slender; l. rather small, rachis 1½–2½ in., slender, cylindrical, glabrous, lflts. usually 5 (2 pair and end one) generally alternate, shortly stalked, lanceolate or ovate-lanceolate, rounded at base, bluntly acuminate, glabrous and shining on both sides, dark green; fl. small, numerous, in erect, much-branched, pyramidal, terminal panicles, ped. shorter than cal., grey with adpressed pubescence, buds linear, pointed; cal.-segm. lanceolate, subacute, faintly ciliate; stam. as long as sep. erect; pod about ¾ in., broadly ovoid, slightly compressed, densely covered with fine brown velvety hairs, with a very thin and brittle shell and a spongy interior; seed nearly ½ in., pale brown, embryo green.

Low country in the dry or intermediate region; rather rare. Haragama and Billahul-oya, east of Kandy; several places in Eastern Province. Fl. April; white.

Endemic.

The fruit is known as the 'wild Tamarind' or 'velvet Tamarind,' and has a pleasant acid flavour; the endocarp in which the taste resides is of a spongy-powdery, not pulpy, consistence and buff-coloured. Not un-

frequently the fruit is attacked by an insect, and then forms a large soft lobed spherical gall with numerous small cavities.

Heart-wood hard, heavy, dark red, strong, and handsome.

54. **CRUDIA,** *Schreb.* (?)

A tree, l. pinnate, lflts. alternate, fl. in terminal racemes; cal.-tube very short, segm. 4 or 5, rotundate; pet. 0; stam. 10, free, the alternate ones shorter; ov. 1-celled with 3 or 4 ovules; pod 1-seeded, seed without endosperm.

C. zeylanica, *Benth. in Trans. Linn. Soc.* xxv. 314 (1865).
Detarium zeylanicum, Thw. Enum. 414. C. P. 3714.
Fl. B. Ind. ii. 271. Bedd. Fl. Sylv. t. 190 (poor).

A large tree; l.-rachis 1½–2 in., glabrous, lflts. 2–6, alternate, usually with a terminal one but sometimes ending with a pair, on short, thick stalks, 2–5 in., oval or ovate-oval, unequal and rounded at base, shortly and obtusely acuminate, glabrous, rather thick, glaucous beneath, minutely reticulate; fl. small, on short ped., arranged in terminal spicate racemes with a stout rachis 2–5 in. long; cal.-segm. roundish, obtuse, persistent; pet. 0; ov. oblong, tomentose; pod (very immature) very shortly stalked, oblong, compressed, slightly falcate, apiculate, densely tomentose.

Moist low country; very rare. I have only seen the C. P. specimens collected at Galpata, near Kalutara, in 1861 and 1863. Fl. January.

Endemic.

The material is insufficient for a full description, or even for certainty as to the genus. I have followed Thwaites in points not shown in the specimens. He describes 3 or 4 ovules in the ov.; hence Bentham has transferred the plant from *Detarium* to *Crudia*, the fruit being unknown to both.

In Jan., 1891, I obtained from the Prov. of Uva, under the name of 'Okuru' (which properly belongs to *Cleidion javanicum*), some ripe pods which are unknown to me, which may perhaps be the fruit of the present species. They are 1–1¼ in. long, and nearly as much in diam., not compressed, slightly curved along dorsal suture, very gibbous and rounded below, very shortly apiculate, pericarp thin, brittle-leathery, rough but glabrous outside, yellowish-grey, indehiscent with a tendency to split along dorsal suture; seed large, solitary, with thick plano-convex cotyledons, without endosperm. Leaves, said to be from the same tree, are those of the plant here given as *Cynometra ramiflora* (type). Further investigation is needed.

55. **SARACA,** *L.*

Small tree, l. abruptly pinnate, fl. in dense terminal or axillary panicles; cal. petaloid, with a long tube and 4

spreading segm., pet. 0; stam. 7 (rarely 8, the uppermost being nearly always suppressed or combined with ov.) inserted on a fleshy lobed ring at mouth of cal.-tube; ov. stalked, occupying the position of the uppermost stam., pubescent, style short; pod large, flat, dehiscent, 2- or 3-seeded; seed without endosperm.—Sp. 6; 4 in *Fl. B. Ind.*

S. indica, *L. Mant.* 98 (1767). **Diya-ratmal, Diya-ratambala,** *S.*
Jonesia pinnata, Willd., Moon Cat. 30. *Jonesia* Asoka*,† Roxb., Thw. Enum. 97. C. P. 653.
Fl. B. Ind. ii. 271. Wight, Ic. t. 206. Bot. Mag. t. 3018.

A rather small, much-branched spreading tree with reddish-grey cracked bark; l. large, spreading horizontally, rachis 6–9 in., stout, much thickened, corky and flexible at base, stip. large $\frac{1}{2}$ in., intrapetiolar, ovate, stiff, brown, deciduous, lflts. 8–12 (4–6 pair) distant, the lowest pair close to base, on short, very stout, flexible stalks, 4–9 in. (the middle ones longest) by $1\frac{1}{4}$–$1\frac{1}{2}$ in. wide, linear, tapering to very acute apex, perfectly glabrous, rather stiff, venation conspicuous beneath; fl. numerous, about 1 in. diam., ped. $\frac{1}{2}$ in., bracts 2, at summit of ped., small, ovate, looking like a cal., panicles large, sessile, much-branched, corymbose, dense, axillary and terminal; cal.-tube $\frac{3}{4}$–1 in., solid at lower part, segm. $\frac{1}{2}$ in., oval, obtuse; stam. with very long fil., much exserted, spreading; style strongly curved into a ring; pod large, 5–9 in. by nearly 2 in. wide, tapering to both ends, much compressed, rigidly leathery, glabrous, veiny; seed $1\frac{1}{2}$–$1\frac{3}{4}$ in., ovoid, slightly compressed.

By streams in forests in the low country, especially in the drier districts; rather common. Fl. Jan.–March, &c.; pale orange-scarlet, filaments purple, anth. black.

Also in India and Malaya.

The flowers are very sweet-scented, especially in the evening; they are at first yellow, and become orange, and finally red, and are profusely produced for many months. The young leaves are pendulous and coloured. The plant is much cultivated for its beauty and sweet scent. Wood light, pale red, rather soft.

Tamarindus indica, L., *Siyambala*, S., *Puli*, T.; the Tamarind is a very commonly planted tree, especially in the dry districts. There are specimens in Hermann's Herb., but it is nowhere wild here. In the dry region of the island it is very conspicuous, every village having several and often magnificent specimens. Trees are occasionally found apparently wild in the jungle, but always on the site of abandoned villages.

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* Named in honour of Sir William Jones, the Oriental scholar and botanist, who first fully described this tree.

† *Asoka* is the Sanskrit name.

56. **HUMBOLDTIA,*** *Vahl.*

Small tree, l. abruptly pinnate with very large double stip., fl. in erect axillary racemes; cal. with short tube and 5 petaloid segm.; pet. 5, clawed; stam. normally 5, often 3 or 4, inserted at mouth of cal.-tube and alternating with 5 small staminodes, anth. versatile; ov. shortly stalked, style very long; pod flat, dehiscent; seed without endosperm.—Sp. 5; 4 in *Fl. B. Ind.*

H. laurifolia, *Vahl, Symb. Bot.* iii. 106 (1797). **Gal-karanda,** *S.* Moon Cat. 17. Thw. Enum. 97. C. P. 328.
Fl. B. Ind. ii. 273. Vahl, Symb. iii. t. 56. Wight, Ic. t. 1605.

A small tree or a shrub with numerous horizontally spreading or rather drooping branches, the young ones with swollen hollow internodes; l. numerous, spreading distichously, rachis 4–6 in., cylindrical, glabrous, thickened and flexible at base, stip. apparently double, really peltate with two separate halves, the longer erect, 1½ in., ovate, obtuse, stiff, the smaller spreading horizontally, broad, auricled towards petiole, very acute at other end, rigid, lflts. 8 or 10 (4 or 5 pair), very shortly stalked, drooping, 2½–3½ in., ovate, slightly unequal at base, caudate-acuminate, undulate, glabrous, rather stiff; fl. about ¾ in., on short finely pubescent ped., arranged in shortly stalked, rigidly erect, axillary racemes about 3–5 in. long, bracts at base of ped. rounded, green, persistent, those at summit oval, pink, enclosing the bud; cal.-segm. oval, obtuse, recurved, thin; pet. clawed, spreading; stam. erect, twice as long as pet.; ov. pilose; pod 3–4 in. by 1¼ in. wide, scarcely stalked, pointed, much compressed, glabrous, veiny.

Damp places in forests in the moist low country; common. Fl. Feb.; white, cal. pink; honey-scented.

Also in Malabar.

The hollow, swollen internodes of the branchlets are inhabited by small ants, which gain access by a little perforation situated between the stipules of the leaf above.

The racemes are stiff and quite erect as figured by Vahl, not drooping as stated in Fl. B. Ind.

7. **BAUHINIA,** *L.*

Trees or woody climbers, l. apparently simple, usually bifid at top, fl. in racemes; cal. either with a short tube and large limb which splits down one side in a spathe-like manner or

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* Named in honour of F. A. von Humboldt, author of 'Flora Friburgensis.' Vahl first named the plant *Batschia* (l. c. 39).

campanulate with 5 segm., pet. 5; stam. 10 (3 in *B. anguina*), distinct; ov. stalked; pod dehiscent or indehiscent, linear, many-seeded; seed with endosperm.—Sp. 130; 36 in *Fl. B. Ind.*

The simple bilobed leaf is obviously a pair of connate lflts.

Trees or shrubs.

Fl. large, bright yellow . . . . 1. B. TOMENTOSA.

Fl. small, nearly white . . . . 2. B. RACEMOSA.

Woody climber; fl. minute . . . . . . 3. B. ANGUINA.

1. **B. tomentosa,** *L. Sp. Pl.* 375 (1753). **Petaṇ, Kaha-petaṇ,** *S.* **Tiruvatti,** *T.*

Burm. Thes. 44. Fl. Zeyl. n. 147. Moon Cat. 33. Thw. Enum. 98. C. P. 1498.

Fl. B. Ind. ii. 275. Burm. Thes. t. 18 (poor); Bot. Mag. t. 5560.

A large erect bush with slender branches, bark yellowish-grey longitudinally furrowed; l. 1½–3 in., conduplicate, deflexed on petiole, divided more than ⅓ down into 2 oval rounded lobes with a setaceous mucro between, truncate at base, glabrous above, densely pubescent and whitish beneath, 7-nerved from the base, petiole ½–¾ in., thickened at both ends; fl. large, nodding, over 2 in., ped short, stout, racemes small, terminal, bracts linear; cal. about 1 in., bifid at top, pubescent, pet. very much imbricated, broad, obovate, rounded, very shortly clawed; style long, stigma terminal, peltate, pod 4–6 in. by ⅝ in. wide, shortly stalked, narrowed to base, pointed, finely pubescent, 8–12-seeded, dehiscent; seed ¼ in., ovoid, shining.

Dry region; very common. Fl. Jan., Feb., August; sulphur-yellow, the upper pet. with a dark-purple blotch at base.

Throughout India and Malaya, and in China and Tropical Africa.

Heart-wood hard, very tough, shining, dark red, moderately heavy, an excellent wood, but too small to be of much value. The colouring of the fl. is precisely that of several species of *Hibiscus;* the petals never spread, but remain imbricated, forming a deep bell-shaped corolla, which is very conspicuous.

[*B. acuminata*, L., is given for Ceylon in Fl. B. Ind. It is, however, only known here in gardens, where it is an old introduction; there are specimens in Hermann's Herb., and he gives (Mus. 8) the native name 'Mayila' for them, which rightly belongs to the next.]

2. **B. racemosa,** *Lam. Ency. Meth.* i. 390 (1783), (non Vahl). **Mayila,** *S.* **Atti,** *T.*

B. parviflora, Vahl, Moon Cat. 33. *Piliostigma racemosum*, Benth., Thw. Enum. 98. C. P. 1497.

Fl. B. Ind. ii. 276. Bedd. Fl. Sylv. t. 182.

A small tree with a thick knotted trunk, much branched, bark blackish, very rough and much furrowed; l. small, con-

duplicate, $1\frac{1}{4}$–$1\frac{1}{2}$ in., broader than long, truncate at base, cut scarcely $\frac{1}{3}$ down into 2 broadly oval rounded lobes, glabrous on both sides, whitish and 9-nerved from the base beneath, with fine reticulate venation, rigid, petiole $\frac{1}{2}$–$\frac{3}{4}$ in.; fl. small, under 1 in., ped. shorter than cal., in erect lax racemes terminating the new growth, buds pointed; cal. reflexed 2 or 3-toothed at end; pet. distant, small, strap-shaped, acute, spreading; stam. a little longer than pet.; style none; pod shortly stalked, very long, 8–10 in. by $\frac{3}{4}$ in. wide, pendulous, tapering to base, blunt at apex, somewhat falcate, leathery, indehiscent, glabrous, 12–20-seeded.

Dry region; very common. Fl. April, June–September; yellowish white.

India, Malaya, and China.

Wood rather heavy, hard, pale brownish-grey; attains a fair size. Very strong fibre is obtained from the inner bark, used for rope-making.

[*B. purpurea*, L., is commonly grown in gardens. There are specimens in Hb. Kew, 'Peradeniya, Macrae;' hence it is given for Ceylon in Fl. B. Ind., but it has no claim to nativity here.]

3. ***B. anguina,** *Roxb. Cor. Pl.* iii. 82 (1819).
Trimen in Journ. Bot. xxiii. 144.
Fl. B. Ind. ii. 284. Hort. Mal. viii. tt. 29–31. Roxb. Cor. Pl. t. 285.

A very wide-spreading woody creeper, with the older stems singularly compressed, and strongly curved in alternate directions between each node, so as to be serpentine, young shoots glabrous with short lateral twigs, each one provided at about $1\frac{1}{2}$ in. from the base with a pair of opposite, stiff, flattened, circinately curved, prehensile tendrils pubescent on upper surface; l. numerous, rather large 5–6 in., ovate, more or less cordate at base, acuminate, quite entire or more or less bifid or bilobed at apex, glabrous and shining, dark green, petiole 1–3 in., stiff, slender, stip. very small, linear, obtuse, reflexed, soon falling; fl. and pod not seen (fl. minute in copiously panicled racemes; stam. 3; pod $1\frac{1}{2}$–2 in., oblong, indehiscent, glabrous).

Low country in the dry and intermediate regions; very rare, and probably merely introduced. Foot of Doluwe Kande, Kurunegala District; near Dambulla (Bower).

Native of India and Malaya.

I have seen no flowers. This great creeper has been long cultivated in the Gardens, and is included in Moon's Catalogue, 1824. As the stems readily root at the joints, it is easily propagated, and freely establishes itself.

III. Mimoseæ.

Stam. 10.	
Aquatic herb	58. Neptunia.
Woody climber	59. Entada.
Trees or shrubs	
Not spinous	60. Adenanthera.
With spinous branchlets	61. Dichrostachys.
Stam. indefinite	
Stam. free	62. Acacia.
Stam. monadelphous below	
Pod straight, flat	63. Albizzia.
Pod curved into a circle, often twisted . .	64. Pithecolobium.

All our 22 species, with the exception of *Pithecolobium subcoriaceum*, are plants of the low country, but *P. bigeminum* also extends up into the lower montane zone. *Neptunia*, *Dichrostachys*, and 7 species of *Acacia* are restricted to the dry region, and *Adenanthera bicolor*, *Albizzia stipulata*, and *Pithecolobium bigeminum* are confined to the moist. *P. geminatum* is the only endemic species.

58. **NEPTUNIA,** *Lour.*

Aquatic annual with floating stems, l. abruptly bipinnate; fl. very small, in heads, the lower ones barren; cal. campanulate, 5-toothed; pet. 5, connate near base; stam. 10 with a gland above the anth. when young, staminodes in barren fl. petaloid; ov. stalked, absent in barren fl.; pod small, dry, early dehiscent along dorsal suture, much flattened, with several seeds.—Sp. 8; 2 in *Fl. B. Ind.*

N. oleracea, *Lour. Fl. Cochinch.* p. 654 (1790). **Diya-nidi-kumba,** *S.*
Thw. Enum. 99. C. P. 1516.
Fl. B. Ind. ii. 285. Roxb. Cor. Pl. t. 119 (*Mimosa natans*).

Annual, floating in water, stem elongated, scarcely branched, with numerous plumose roots pendulous from the nodes, stout, often swollen, purple, often provided on the outside with floats of white spongy tissue; l. bipinnate, main rachis $1\frac{1}{2}$–2 in., at right angles with stem, glabrous, stip. membranous, ovate, acute, persistent, pinnæ 2 or 3 pair, opposite, shortly stalked, $\frac{3}{4}$–1 in. long, lflts. 18–28 (9–14 pair), sessile, $\frac{1}{4}$–$\frac{3}{8}$ in., linear, obtuse, glabrous, glaucous beneath; fl. sessile in an oblong head $\frac{1}{2}$–1 in. long, at end of stout, erect, tapering, glabrous, axillary peduncle 3–5 in. long, the barren ones in lower part of head; pet. strap-shaped; stam. much exserted, staminodes longer, $\frac{3}{8}$ in., strap-shaped, acute; pod long-stalked, deflexed, 1 in. by $\frac{2}{8}$ in. wide, broadly oblong, beaked, glabrous, 4–6-seeded.

Shallow pools and stagnant water in the dry region; rather common. Fl. all the year; yellow.

Found throughout the Tropics.

The plant is completely aquatic; its stems float by means of white spongy masses developed on the outside of the cortex.

N. plena, Benth., a Tropical American species, is said in Fl. B. Ind. to be introduced to Ceylon. There are specimens in Hb. Kew labelled 'Ceylon, Walker n. 1417.'

59. **ENTADA,** *Adans.*

A very large woody climber, l. bipinnate, ending in a tendril, fl. very small, polygamous (male and bisexual) in long narrow spikes; cal. campanulate with minute teeth; pet. 5, equal, valvate, slightly connate at base, stam. 10, free, twice as long as pet., anth. with globular gland on top; pod very large, woody, composed of indehiscent joints; seeds very large, flat.—Sp. 10; 1 in *Fl. B. Ind.*

E. scandens, *Benth. in Hook. Journ. Bot.* iv. 332 (1842). **Puswel,** *S.*

Herm. Mus. 44. Burm. Thes. 139. Fl. Zeyl. n. 219. *Mimosa Entada*, L. Sp. Pl. 518. *Acacia scandens*, W., Moon Cat. 73, Thw. Enum. 98. C. P. 2661.

Fl. B. Ind. ii. 287. Rheede, Hort. Mal. ix. t. 77, and viii. tt. 32–4.

An immense woody climber, with a thick trunk and long twisted snakelike branches; l. large, main rachis 6–10 in., stiff and semi-woody ending in a bifid spiral tendril by which the plant climbs, pinnæ 2 or 3 pair with stiff glabrous rachis 3 or 4 in. long and much thickened at base, lflts. 6 or 8 (3 or 4 pair), $1\frac{1}{2}$–2 in., obovate-oblong, acute at base, rounded, often emarginate at apex, glabrous, paler beneath, with the lat. veins conspicuous; fl. sessile, crowded in long, narrow, pedunculate axillary spikes 6–10 in. long; pod $1\frac{1}{2}$–2 ft. long, by $2\frac{1}{2}$–3 in. wide, curved, often twisted, compressed, woody, indented on both sutures between the seeds, joints 6–12, turgid, 1-seeded, indehiscent, glabrous, brown; seed very large, $1\frac{3}{4}$–2 in., circular, compressed, smooth and shining, brown, testa thick and woody.

Low country up to 2000 ft.; common. Fl. Feb.–April; greenish-white.

Throughout the Tropics.

The joints composing the immense pod break away from one another, and also from the thickened sutures which remain as an empty frame.

The juice of the wood and bark is used as an external application to ulcers; also, I am told, to poison fish.

60. **ADENANTHERA,** *L.*

Trees, not spinous, l. bipinnate, without stip., lflts. alternate, fl. very small in axillary spicate racemes; cal. campanulate, shallowly toothed; pet. 5, equal, valvate, very slightly coherent at base; stam. 10, free, equalling pet., anth. with an ovoid gland on summit; pod narrow, falcate or twisted, thin, torulose, with several seeds.—Sp. 4; 2 in *Fl. B. Ind.*

Lflts. rounded; seed all red . . . . 1. A. PAVONINA.
Lflts. acuminate; seed half red, half black . . . 2. A. BICOLOR.

1. **A. pavonina,** *L. Sp. Pl.* 384 (1753). **Madatiya,** *S.* **Anaikuntumani,** *T.*

Herm. Mus. 21. Burm. Thes. 79. Fl. Zeyl. n. 160. Moon Cat. 34. Thw. Enum. 98. C. P. 3605.
Fl. B. Ind. ii. 287. Bedd. Fl. Sylv. t. 46. Wight, Ill. t. 80.

A tall tree with erect trunk, and pale grey rather smooth bark, young parts quite glabrous; l. large, wide-spreading, main rachis 8–12 in., glabrous, furrowed above, striate, pinnæ 3 or 4 pair with rachis horizontally spreading and thickened at base, lflts. 8–12, alternate, stalked, distant, $1\frac{1}{2}$ in. or more, oval-oblong, rounded at both ends, unequal at base, glabrous, thin, dark green, paler beneath; fl. on short horizontal glabrous ped., racemes stalked, lax, shorter than l., buds blunt, bracts minute, very early deciduous; cal. glabrous; pet. linear-lanceolate, acute; pod 6–8 in. by nearly $\frac{3}{4}$ in., tapering to base, pointed, falcately curved, glabrous, valves becoming spirally twisted after dehiscence; seeds 8–10, $\frac{3}{8}$ in., globose-lenticular with blunt keel, brilliant scarlet, shining.

Low country; common, but generally planted. Fl. April; greenish-white.

Also in India, Malaya, Philippines, and China.

The bright scarlet seeds are well known; they are called 'Mad-éta,' and are the principal weights used by gold and silversmiths, weighing each somewhat less than 4 grains.

Heart-wood hard, moderately heavy, close-grained, pale brownish-red.

2. **A. bicolor,** *Moon Cat. Ceyl. Pl.* 34 (1824). **Mas-mora,** *S.* [PLATE XXXIV.]

Thw. Enum. 98. C. P. 324.
Fl. B. Ind. ii. 287.

A moderate-sized tree with wide-spreading branches, young shoots glabrous, entirely of a dull vinous-purple colour; l. numerous, spreading, main rachis 6–8 in., glabrous, shining, purplish, scarcely channelled, pinnæ 3 or 4 pair or often alternate with slender purple rachis thickened at base, lflts. 5–7, alternate, very distant, shortly stalked, disarticulat-

ing, $1\frac{1}{4}$–$1\frac{3}{4}$ in., broadly oval, acute at base, shortly and bluntly acuminate, glabrous, paler beneath; fl. as in the last; pet. lanceolate; pod 3–5 in. by about $\frac{3}{8}$ wide, usually much twisted; seeds 6–10, $\frac{3}{8}$–$\frac{1}{2}$ in., shining, the basal half red, the upper half black.

Moist low country; rather rare. Kalutara (Moon); Madulla; Mapalagama. Fl. December, April; greenish-pink.

Also found at Malacca.

Moon quotes for this Rumph. Herb. Amboin. iii. t. 212, a doubtful plant not yet clearly identified.

61. DICHROSTACHYS, *W. and A.*

A bush with spinous branchlets, l. abruptly bipinnate, fl. very small, in drooping spikes, the lower ones barren; cal. campanulate, segm. short, triangular, pet. connate for $\frac{3}{4}$ length from base; stam. 10, free, represented in barren fl. by long staminodes, anth. with a stalked gland on summit, pod linear, flat, indehiscent, somewhat jointed, much twisted up spirally when ripe, 6–10-seeded.—Sp. about 5; 1 in *Fl. B. Ind.*

D. cinerea, *W. and A. Prod.* 271 (1834). **Andara,** *S.* **Vidattal,** *T.*

Herm. Mus. 24. Burm. Thes. 3. Fl. Zeyl. n. 215. *Mimosa cinerea,* L. Sp. Pl. 520. *Desmanthus cinereus,* Willd., Moon Cat. 73. Thw. Enum. 99. C. P. 1523.

Fl. B. Ind. ii. 288. Burm. Thes. t. 2. Bedd. Fl. Sylv. t. 184. Wight, Ic. t. 357.

A shrub or small tree with numerous divaricate branches, bark yellowish, fibrous, vertically furrowed, ultimate twigs sharply spinous at end, many reduced to short, woody, axillary spines, bark yellowish-grey, young parts pubescent; l. small, mostly from the suppressed branchlets, rachis 1–$1\frac{1}{2}$ in., slender, hairy, with a small erect gland between the bases of each pair of pinnæ, pinnæ 8–16 pair, $\frac{1}{2}$–$\frac{5}{8}$ in., sessile, hairy, lflts. minute, numerous 24–40 (12–20 pair), closely placed, sessile, linear, oblique, subacute; fl. numerous, sessile, crowded in dense spikes about 1 in. long on drooping peduncles coming off from the suppressed branchlets below the l., bracts minute setaceous; cal. pubescent, stam. much exceeding cor., staminodes much longer (nearly $\frac{1}{2}$ in.) filiform; ov. hairy; pod 2–3 in. by $\frac{3}{8}$ in. wide, glabrous, dark brown.

Dry region; very common; and in the most barren places. Fl. Dec.–March, Aug., Sept.; barren fl. bright purplish-pink, fertile ones yellow.

Also in India, Malay Islands, N. Australia, and (?) Trop. Africa.

The tassel-like, particoloured, drooping flower-spikes are very pretty, and a noticeable feature in the stunted jungle in desert places.

The heart-wood is dark red, extremely hard and strong, and said to be the toughest in Ceylon; but it is too small to be of much use.

Desmanthus virgatus, Willd., C. P. 3606, is a not uncommon weed in cultivated ground, but certainly not indigenous, here. It was collected by Hermann, and is Fl. Zeyl. n. 505 (*Mimosa virgata*, L.).

Leucæna glauca, Benth., is naturalised in many places in the low country. A native of North America.

Mimosa pudica, L., is a very abundant and most troublesome weed throughout the low country. It is said by Gardner to have been introduced here by Moon, and it is included in his Catalogue (1824), p. 73, but it seems to have been here earlier. Its native country appears to be Brazil. Like other sensitive plants, it is called 'Nidi-kumba' by the Sinhalese. The root is considered an antidote for cobra bite.

62. **ACACIA,** *Willd.*

Trees or shrubs often scandent by prickles, l. bipinnate, often with sharp persistent stipular spines, fl. very small, in heads or spikes, often polygamous; cal. campanulate or funnel-shaped, segm. more or less triangular; pet. connate into a cor. with 5 lobes, stam. indef. free, much longer than cor., anth. not gland-tipped; pod dry, usually compressed, dehiscent (rarely indehiscent); seeds several, on long funicles.—Sp. 430 (mostly Australian); 18 in *Fl. B. Ind.*

Trees or shrubs.
  Fl. in globular heads.
    Heads axillary.
    Pod strongly constricted between seeds . . 1. A. ARABICA.
    Pod not constricted.
      Pod cylindrical . . . . 2. A. PLANIFRONS.
      Pod flat.
        Lflts. 5–8 pair, glabrous . . . . 3. A. EBURNEA.
        Lflts. 8–16 pair, tomentose . . . 4. A. TOMENTOSA.
    Heads in panicles . . . . 5. A. LEUCOPHLŒA.
  Fl. in spikes.
    Pinnæ 9–18 pair . . . . 6. A. SUNDRA.
    Pinnæ 4–6 pair . . . . 7. A. FERRUGINEA.
Woody climbers.
  Lflts. 10–22 pair, linear-oblong . . . . 8. A. CÆSIA.
  Lflts. 40–50 pair, narrowly linear. . . . 9. A. PENNATA.

Several Australian species, especially *A. dealbata*, Link, and varieties of *A. decurrens*, Willd., have been extensively planted in the montane region; *A. Melanoxylon*, Br., is also common about Nuwara Eliya.

A. Farnesiana, Willd., is quite naturalised in many parts of the low country, and is C. P. 1522. It appears to be indigenous to Western Trop. America and Australia, and perhaps to S. Africa.

1. * **A. arabica,** *Willd. Sp. Pl.* iv. 1085 (1805). **Karuvél,** *T.*
Thw. Enum. 415. C. P. 3640.
Fl. B. Ind. ii. 293. Bedd. Fl. Sylv. t. 47.

A shrub or small tree, with dark bark and slender terete straight branchlets, young parts pubescent; l. small, rachis 2–2½ in., pubescent, stipular spines variable from small and inconspicuous to 2 in., slender, spreading white, sometimes quite absent, pinnæ 3–5 pair, 1–1¼ in., distant, lflts. 24–30, (12–15 pair), ⅙ in., very shortly stalked, strap-shaped; fl. in dense globular heads, 2–5 together from the axils, peduncles ½–¾ in., pubescent with 2 bractlets above the middle; cor. twice as long as cal.; pod 4–6 in., straight, 8–12-seeded, strongly constricted at sutures between the seeds, densely covered with fine grey down.

Dry region; very rare. Collected at Trincomalie by Glenie, but perhaps only introduced there; Jaffna, apparently wild, but probably originally planted.

Native in N.W. India, Arabia, Egypt, Tropical Africa. This is the well-known 'Babul' so common in N. India; but Beddome has never seen it truly wild in the forests of the Peninsula, and it is unlikely to be native to Ceylon.

On the upper part of the branches bearing the flower-heads the leaves are often suppressed.

2. **A. planifrons,** *W. and A. Prod.* 276 (1834). **Odai, Udai,** *T.* [PLATE XXXV.]

Trimen in Journ. Bot. xxiii. 144.

Fl. B. Ind. ii. 293.

A small tree, usually with an erect stem and an umbrella-like head, branches spreading in a plane (like those of Cedar), bark very thick, dark grey, rather smooth, on the young branchlets purplish, stipular spines of two kinds mixed, either very short and curved downwards, or 1½–2 in. long, straight, very divaricate, slender, scarcely tapering, white with a brown polished point; l. very small, in fascicles from arrested branchlets, rachis about 1 in., very slender, flattened above, slightly hairy, pinnæ 3 or 4 pair, closely placed near end of rachis, ½–⅝ in. long, lflts. very minute, 10–20 (5–10 pair) strap-shaped, obtuse; fl. minute, sessile in dense globular heads ⅜ in. diam., peduncles ½–¾ in., very slender, with the bracts below the middle, coming off with the l. from the arrested branchlets; pod about 2 in. by ¼ in. wide, cylindrical, turgid, acute, curved nearly into a ring, glabrous.

Dry region; very rare. Confined to the island of Mannar (and a very small part of the mainland opposite), where it is extremely abundant. Fl. Oct.–March; pale creamy-white.

Also in S. India and in Ramisseram Island.

This is the 'Umbrella Tree' of the English;* and very characteristic

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* The Rev. J. Cordiner, who visited Mannar in 1804, gives an account of the 'Umbrella Tree' in his 'Ceylon,' vol. ii. pp. 8 and 32.

of Mannar, where it composes almost the whole forest, and from the horizontal arrangement of the branches gives it a very peculiar aspect. The trees, when covered in Feb. with sheets of white blossom, look like old hawthorn trees. It is cultivated in a few Colombo gardens for ornament, and has occasionally appeared on the shore there, no doubt brought with ballast from Tuticorin, where it is also abundant.

The wood is very hard and heavy, pale yellow, and when fresh cut has a faint alliaceous smell. It is much used for firewood, and there is a large export from Mannar to S. India (Tuticorin and Negapatam) amounting in 1890 to 3,446,422 logs, value Rs. 68,243 (as I am informed by Mr. M. S. Crawford).

The pods are largely used as food for sheep, goats, and cattle in the dry season.

The description under this name in Fl. B. Ind. is partly made up from some other species.

3. **A. eburnea,** *Willd. Sp. Pl.* iv. 1081 (1805). **Udai-vél, Kal-udai,** *T.*

Thw. Enum. 99. C. P. 1521.

Fl. B. Ind. ii. 293. Roxb. Cor. Pl. t. 199 (not good).

A large bush or small tree, much branched, bark of young branches purplish-brown, smooth, stipular thorns always straight, varying in size from $\frac{1}{8}$ to $2\frac{1}{4}$ in., gradually tapering from a broad base to a very sharp point, ivory-white, polished; l. small, arranged as in the last, pinnæ 2–7 pair, $\frac{1}{4}$–$\frac{3}{8}$ in., glabrous, lflts. minute 10–16 (5–8 pair) oblong, obtuse; fl. as in the last, heads $\frac{1}{2}$ in. diam., bracts about middle of peduncle; pod 3–4 in. by $\frac{3}{8}$ in. wide, shortly stalked, compressed, more or less falcately curved, pointed, glabrous, veiny, 6–9-seeded, slightly compressed between the seeds.

Dry and desert regions, especially near the coast; rather common. Trincomalie; Hambantota District, abundant; Jaffna, and the whole west coast to Puttalam. Fl. Dec.–Feb.; bright dark yellow.

Also in India, Affghanistan, and Arabia.

Cordiner ('Ceylon,' ii. 5) noticed this in 1804 on the coast north of Aripo, and calls it the 'Cockspur Thorn,' a very appropriate name.

The wood is small but very hard, yellowish-white.

4. **A. tomentosa,** *Willd. Sp. Pl.* iv. 1087 (1805). **Anaimulli,** *T.*

Thw. Enum. 99. C. P. 744.

Fl. B. Ind. ii. 294.

A small bushy tree, bark yellowish-grey with large lenticels, purplish on twigs, young parts tomentose, stipular thorns straight, broad at base and rapidly tapering to sharp point, varying in size, the larger ones reaching $3\frac{1}{2}$ in. and over $\frac{1}{2}$ in. wide at base, inflated, pubescent when young, afterwards glabrous, grey becoming black, very sharply pointed; l. longer than in last, rachis $1\frac{1}{2}$–$3\frac{1}{2}$ in., flat, very pubescent, pinnæ 6–10 pair, 1–$1\frac{1}{2}$ in., the lower ones shortest, lflts. 16–32 (8–16 pair),

opposite, sessile, $\frac{1}{8}$–$\frac{1}{6}$ in., broadly oblong, tomentose-pubescent on both sides; fl.-heads globular, over $\frac{1}{2}$ in. diam., peduncles about 1 in., pubescent with the bracts a little above the middle; pod 4–5 in. by $\frac{1}{2}$ in. wide, compressed, strongly falcate, bluntly pointed, 5–8-seeded, somewhat torulose, at first pubescent and grey afterwards glabrous and reddish; seed $\frac{3}{8}$ in., ovoid, compressed, olive green with a ring of paler colour on either face.

Dry region; rare. Kalpitiya (Gardner); Jaffna; Illupaikadavai, Mannar Dist. Fl. Feb.–April; pure white (not 'purple' as given in Fl. B. Ind.).

Also in Bengal, Java, and perhaps Southern India.

The enormous black or greyish-brown thorns, whence its name of 'Elephant Thorn,' are very characteristic. Tennent ('Ceylon,' i. 108) says they are called the 'Jungle Nail' by Europeans.

5. **A. leucophlœa,** *Willd. Sp. Pl.* iv. 1083 (1805). **Maha-andara, Katu-andara,** *S.* **Velvél,** *T.*

Thw. Enum. 99. C. P. 1520.

Fl. B. Ind. ii. 294. Bedd. Fl. Sylv. t. 48.

A large tree, bark thick, pale yellowish-white, branches dense, spreading, young branches pubescent, stipular thorns small, straight; l. numerous, closely placed, rachis $2\frac{1}{2}$–3 in., densely pubescent, with a small red sessile gland between bases of each pair of pinnæ, pinnæ 5–15 pair, lflts. very small, sessile, crowded 30–40 (15–20 pair), $\frac{1}{8}$–$\frac{1}{4}$ in., linear-strap-shaped, subacute, glabrous or slightly hairy; fl.-heads numerous, globular, small, $\frac{1}{4}$–$\frac{3}{8}$ in. diam., peduncle $\frac{3}{8}$ in., woolly, the bracts about the middle, in large axillary tomentose panicles with slender branches; pod 3–5 in. by $\frac{1}{6}$ in. wide, linear, very slightly curved, flexible, pendulous, subdehiscent, finely but densely tomentose, seeds numerous.

Dry region; common. Fl. Aug.–Sept.; bright pale yellow.

Also in India, Burma, Malay Islands.

The thick yellowish-white bark is known as 'Velam' bark, and is exported to India for the arrack distillers. It is used in Ceylon for dyeing sails, mats, &c., and for tanning, and also affords a coarse fibre. The heart-wood is very hard, heavy, and brownish-red, tough, and strong.

6. **A. Sundra,*** *DC. Prod.* 458 (1825). **Rat-Kihiri,** *S.* **Kodali-murunkai,** *T.*

A. Catechu, Thw. Enum. 99 (non Willd.). C. P. 3547.

Fl. B. Ind. ii. 295. Bedd. Fl. Sylv. t. 50.

A small or middle-sized tree, bark dark brown, young shoots purple, quite glabrous; stipular thorns small, decurved, hooked, black, often absent; l.-rachis 4–5 in., tapering, glabrous, with a large sessile gland betwen the bases of each

* Sundra or Chundra is the Telegu name.

pair of pinnæ, slightly channelled above, often with recurved prickles beneath, pinnæ 9–18 pair, 1–1¼ in., lflts. 40–60 (20–30 pair), small, ⅛ in., sessile, crowded, easily falling, linear, obtuse, quite glabrous; fl. small, sessile, in rather lax, shortly stalked, erect, axillary spikes 3–4 in. long; cal. quite glabrous; cor. three times as long as cal., lobes linear-lanceolate; pod 3½–5 in. by ⅝ wide, stalked, nearly straight, tapering to each end, very thin, margin often indented between the seeds, quite glabrous, veiny, dark brown; seeds 4–6, broadly oval, much compressed, pale greenish-brown.

Dry region; rare. Bintenne county below Balangoda, 1857 (Thwaites); Northern Prov. (Vincent); between Mannar and Vavuniya (Capt. Walker). The late H. Meade recorded it from Patchilapillai, near Jaffna, in 1859. Fl. September; pale yellow or pinkish.

In Peninsular India and Burma; also in Trop. Africa (?).

The heart-wood is red and extremely hard and heavy, whence the T. name ('axe-breaker'). It is also bitter, and the Sinhalese make drinking-cups from it.

This is so closely allied to *A. Catechu*, Willd., as to be combined with it by many botanists. That tree, however, has more numerous pinnæ and lflts., and the calyx is tomentose. It appears to be confined to Northern India and Burma, and is figured in Roxb. Cor. Pl. t. 175 and Bentl. and Trim. Med. Pl. ii. t. 95. From the wood of *A. Catechu* is prepared the astringent extract called Cutch in India, but I have no knowledge of anything of the kind being obtained from our Ceylon tree, though it probably could be.

A. Suma, Kurz., figured (as *A. Catechu*) in Bedd. Fl. Sylv. t. 49, is given as a Ceylon species in Fl. B. Ind. ii. 294. The specimen in Herb. Kew is from Macrae, and was in all probability gathered from the old trees of this species in Peradeniya Gardens. But it may perhaps occur in the Northern Prov., and is easily known by its white papery bark. It also affords Cutch.

7. **A. ferruginea,** *DC. Prod.* ii. 458 (1825).
Trimen in Journ. Bot. xxiii. 145.
Fl. B. Ind. ii. 295 (not given for Ceylon). Bedd. Fl. Sylv. t. 51.

A moderate-sized tree, bark rust-coloured, young parts glabrous, stipular thorns small, straight, often absent; l.-rachis 2–3½ in., glabrous, with a sessile gland midway between base and lowest pair of pinnæ and another between the bases of uppermost pair, pinnæ 4–6 pair, rather distant, 1½–2 in., lflts. 30–40 (15–20 pair) very shortly stalked, ⅓–¼ in., linear-oblong, unequal-sided, obtuse, glaucous-green paler beneath, rigid; fl. sessile, in slender axillary erect spikes 3–4 in. long; cal. glabrous, segm. triangular, acute; cor. twice as long as cal., lobes lanceolate; pod (not seen) much as in the last.

Dry region; very rare. At present collected only at Anemaduwe in the North-west Province between Puttalam and Kurunegala. Fl. Aug.; yellowish.

Also in Southern India.

8. **A. cæsia,** *Willd. Sp. Pl.* iv. 1090 (1805). **Hinguru,** *S.*
Herm. Mus. 34. Burm. Thes. 3. Fl. Zeyl. n. 217. *Mimosa cæsia,* L. Sp. Pl. 522. Moon Cat. 73. *A. Intsia,* Willd., Thw. Enum. 99. C. P 3607, 1519.
Fl. B. Ind. ii. 297 (*A. Intsia*). Pluk. Phyt. t. 330, f. 3. Rheede, Hort. Mal. vi. t. 4.

A large woody climber, stems attaining $\frac{3}{4}$ in. diam., slightly rough but not pubescent, greyish or yellowish, copiously set with small, very sharp, hooked, decurved prickles, young parts minutely pilose; l. numerous, rachis 5–6 in., swollen at base, nearly glabrous when mature, slightly channelled above, with a large sessile gland near base and smaller ones just below the bases of one or two uppermost pairs of pinnæ, the under side set with decurved hooked prickles, stip. cordate, acute, early caducous, pinnæ 5–8 pair, with a flattened rachis 2–3 in. long, lflts. 20–40 (10–20 pair), nearly sessile, crowded and slightly overlapping, $\frac{3}{8}$–$\frac{1}{2}$, very unequal-sided, the midrib near the upper margin, linear-oblong, truncate at base, abruptly acute or mucronate, glabrous on both sides; fl.-heads globular, very numerous, small $\frac{3}{8}$ in., on finely woolly peduncles $\frac{1}{4}$–$\frac{3}{8}$ in. long and 2–4 at a node, arranged in large pubescent pyramidal terminal panicles, bracts linear, inconspicuous; cal. funnel-shaped, pubescent, lobes acute; pod large, about 6 in. by $1\frac{1}{4}$ in. wide with a short stalk, bluntly pointed, straight, flat and thin, glabrous, slightly veined, 6–10-seeded, dehiscent.

Low country; common. Fl. Sept.; yellow.
Also in India, Malaya, and Philippines.
A variable plant, horribly prickly; the lflts. soon fold together after gathering. *A. Intsia* cannot be separated from *A. cæsia* even as a variety.

[*A. concinna,* DC., is included in Thw. Enum. 99, and following this is given for Ceylon in Fl. B. Ind. ii. 297 and Trim. Syst. Cat. 30. But all the specimens of C. P. 1519 that I have seen are referable to *A. cæsia,* with which Thwaites clearly confounded it. There are no Ceylon specimens in Herb. Kew or Brit. Mus.]

9. **A. pennata,** *Willd. Sp. Pl.* iv. 1090 (1805). **Goda-hinguru,** *S.*
Herm. Mus. 30. Burm. Thes. 2. Fl. Zeyl. n. 216. *Mimosa pennata,* L. Sp. Pl. 522. Moon Cat. 73. Thw. Enum. 99. C. P. 3300.
Fl. B. Ind. ii. 297. Burm. Thes. t. i. (good).

A stout woody climber, stems much as in the last, but with smaller and straighter prickles (often quite absent), young branchlets pubescent; l.-rachis 4–6 in., densely pubescent, with a large sessile gland above near its base, and also between the base of the upper 2 or 3 pair of pinnæ, under surface with recurved prickles, pinnæ 10–18 pair, $1\frac{1}{4}$–$1\frac{1}{2}$ in., usually curved, lflts. very numerous, 80–100 (40–50 pair) very closely placed, slightly overlapping, very small, $\frac{1}{8}$ in., narrowly

linear, somewhat falcate, mucronate, very unequal-sided, the midrib close to the upper edge, glabrous or slightly hairy; fl.-heads globular, $\frac{3}{8}$–$\frac{1}{2}$ in. diam., on pubescent ped. $\frac{3}{4}$ in. long, 2–4 together in axils of l or bracts, the whole forming a long racemose panicle; cal. glabrous; pod $4\frac{1}{2}$–5 in. by $\frac{7}{8}$ in. wide, stalked, apiculate, flat, glabrous, not veiny; seeds 10–14, closely placed, oval-oblong, compressed, dark brown.

Low country; rare. Kalutara (Moon); Haragama; Lagalla.
Fl. July, August; yellow, purple in bud.
Throughout India, Malaya, and Trop. Africa.
Readily known by the very numerous overlapping narrow lflts., making each pinna like the feather of a bird.

63. **ALBIZZIA,*** *Durazz.*

Trees, without thorns or prickles, l. bipinnate, fl. small in small heads or umbels, not polygamous; cal. funnel-shaped or tubular, segm. very short; pet. connate half way up into a cor.; stam. indef., slightly monadelphous at base, much longer than cor., anth. not gland-tipped; pod large, flat, thin, straight, dehiscent, seeds several on long funicles.—Sp. 30; 10 in *Fl. B. Ind.*

Pinnæ 2–4 pair.
  Lflts. 5–9 pair; fl. stalked . . . . . 1. A. LEBBEK.
  Lflts. 10–14 pair; fl. sessile . . . . . 2. A. ODORATISSIMA.
Pinnæ 10–16 pair.
  Lflts. with midrib close to upper edge . . 3. A. STIPULATA.
  Lflts. with midrib nearly central . . . 4. A. AMARA.

1. **A. Lebbek,**† *Benth. in Lond. Journ. Bot.* iii. 87 (1844). **Mara,** *S.* **Kona, Vakai,** *T.*
Thw. Enum. 99. C. P. 3130.
Fl. B. Ind. ii. 298. Bedd. Fl. Sylv. t. 53.

A large tree, with cracked, grey bark and wide-spreading branches, young parts glabrous, buds finely rufous-pubescent; l. large, main rachis 7–9 in., swollen at base, glabrous, and shining, with a large circular gland close to base, and another at apex, pinnæ 2–3 pair, rather distant, 5–6 in., rachis spreading horizontally, swollen at base, glabrous, with 2 small glands near the base, and 1 below the insertion of each pair of lflts. except the basal ones, lflts. 10–18 (5–9 pair) shortly stalked, large, $1\frac{1}{2}$–2 in., oval-oblong, rounded and retuse at apex, very unequal-sided, glabrous, rather paler beneath, fl. on slender

* Dedicated to the old and noble family of the Albizzi, of Florence.
† From the Egyptian name, which, however, very doubtfully belongs really to this tree.

ped. 1½–2 in., 1–4 together, the whole forming a lax corymbose terminal panicle; cal. nearly glabrous, tubular-funnel-shaped, segm. short, triangular; cor. twice as long as cal.; stam. forming a tassel ¾ in. long; pod large, 9–12 in. by 1¾ in. wide, bluntly pointed, thin, pale yellow; seeds about 12, small, compressed.

Dry region; rather rare. Anuradhapura; Uma-oya. Often planted. Fl. April; greenish-white.

Throughout Tropical and Sub-tropical Asia and Africa, but usually a planted tree.

Heart-wood brown, hard, shining, with large pores; a fine wood, does not warp or crack.

2. **A. odoratissima,** *Benth. in Lond. Journ. Bot.* iii. 88 (1844). **Suriya-mara, Huriyi,** *S.* **Ponnaimurankai,** *T.*

Mimosa odoratissima, L. f. Suppl. Plant. 437; Moon Cat. 73. Thw. Enum. 100. C. P. 1529.

Fl. B. Ind. ii. 299. Bedd. Fl. Sylv. t. 54.

A very large tree, with thick grey rough bark and spreading branches, young parts pubescent; l. rather large, rachis 4–6 in., pubescent, with a single large sessile gland near the base, and generally one between bases of terminal pair of pinnæ, pinnæ generally 4 pair, rather distant, about 4 in., pubescent; lflts. 20–28 (10–14 pair), sessile, rather large, ¾–1¼ in., oblong, rounded, apiculate, very unequal-sided, the midrib near the upper margin, glabrous above, finely downy and glaucous beneath, stiff; fl. sessile, few, heads ½–⅔ in. diam., peduncles ¾ in., pubescent, 1–4 together, arranged in terminal panicles, cal. densely pubescent, segm. short, broadly deltoid; cor. pubescent outside, cut into 4 acute segm.; stam. twice as long as cor.; pod 4–7 in. by 1–1½ in. wide, very shortly stalked, abruptly pointed, roughish but glabrous, slightly veiny; seeds 6–12, small, much flattened.

Low country in both moist and dry regions, especially the latter; common. Fl. May–September; pure white, sweet-scented.

Also in India and Malacca.

Heart-wood dark brown, very hard, works and seasons well.

3. **A. stipulata,** *Boiv. in Encycl. XIXe Siècle*, ii. 33 (1834 ?). **Kabal-mara, Hulan-mara,** *S.*

Thw. Enum. 100. C. P. 1517.

Fl. B. Ind. ii. 300. Bedd. Fl. Sylv. t. 55.

A tall tree, with pale grey, thin, rather smooth bark, young branchlets and buds covered with fine golden pubescence; l. large, rachis 8–14 in., stout, at first pubescent afterwards glabrous, angled above, with a prominent gland half way between base and lowest pair of pinnæ, and also between the bases of each pair, pinnæ 10–15 pair, 3½–5 in., thickened at base, pubescent, lflts. very numerous, 60–80

(30–40 pair), crowded, subsessile, about $\frac{3}{8}$ in., $\frac{1}{2}$-ovate, the midrib close to upper margin, truncate-rounded at base, acute, slightly pilose beneath, stip. very large but soon falling, $1\frac{1}{4}$ in., unequally cordate, acuminate, with a filiform tail, base much dilated on one side, membranous, crisped, pubescent, pinkish-orange; fl. on very short ped., in small lax heads, peduncles $\frac{1}{2}$–$\frac{3}{4}$ in., divaricate, pubescent, 1–4 together, arranged in rather small terminal or axillary panicles; cal. tubular, puberulous, very slightly toothed; cor. twice as long as cal., with acute recurved segm.; stam. $1\frac{1}{4}$ in., fully 4 times as long as cor.; pod 6–8 in. by $1\frac{1}{4}$ in. wide, very shortly stalked, tapering to base, blunt, roughish but glabrous, pale brown, 8–12-seeded.

Moist low country up to 2000 ft.; common. Fl. April, May; white, the end half of the filaments pink; sweet-scented.

Also in E. Bengal, Burma, and Malaya.

Readily recognised by the golden-orange colouring of the young foliage. The great pink stipules are very characteristic of this beautiful tree, but they very soon fall away (not 'persistent' as given in Fl. B. Ind.), leaving no trace beyond a small oval scar. The lflts. quickly fold together after being gathered.

A quick-growing tree, often planted for shade. Heart-wood pale brown, soft, light, recommended for tea-boxes.

4. **A. amara,** *Boiv. in Encycl. XIXe Siècle,* ii. 34 (1834 ?). **Uyil,** *T.*
Thw. Enum. 100. C. P. 1518.
Fl. B. Ind. ii. 301. Bedd. Fl. Sylv. t. 61.

A rather small much-branched tree, young shoots densely pubescent; l. rather small, rachis 3–4 in., densely pubescent, with a small gland midway between base and lowest pair of pinnæ and another between the bases of that pair, pinnæ 10–16 pair, 1–$1\frac{1}{2}$ in., densely pubescent, lflts. 20–60 (10–30 pair), closely placed and slightly overlapping, very small, $\frac{1}{4}$ in., sessile, linear, subacute, the midrib nearly in the centre, pubescent, glaucous beneath, articulated and easily detached; fl. shortly stalked in rather dense heads, 1–$1\frac{1}{2}$ in. diam., peduncles solitary or 2 or 3, ascending, from axils of young l. and not forming a panicle; cal. funnel-shaped, puberulous, segm. short, ciliate; cor. pubescent outside, 3 times as long as cal.; stam. over $\frac{1}{2}$ in.; pod 4–5 in. by 1 in. wide, shortly stalked, apiculate, very thin, veiny, 6–8-seeded.

Dry and desert regions; rare. North of the Island (Gardner); Kalpitiya; Mannar, abundant; near Nalande (Alexander). Fl. August; pinkish.

Also in Peninsular India and E. Trop. Africa.

This is, no doubt, the 'Weel-tree' which Cordiner (l. c. 34) records from Mannar in 1804.

Wood extremely hard and strong, heavy, and close-grained, dark brown.

A. moluccana, Miq., a native of Java and other Malayan Islands, has been a good deal planted as a shade-tree during the last ten or twelve years, having been introduced in 1880. Its growth is extraordinarily rapid; a tree in the Bot. Garden at Peradeniya 6½ years old, cut down in 1893, was 89 ft. high, and girthed 6½ ft. at a yard above the ground.

64. PITHECOLOBIUM, *Mart.*

Trees, sometimes thorny, l. bipinnate, with or without stip., fl. small in rounded heads or umbels, not polygamous; cal. campanulate or tubular, segm. very short; pet. connate half way up into a cor.; stam. indef., monadelphous at base, much longer than cor., not gland-tipped; pod flat, usually curved into a circle and often twisted, usually dehiscent, sometimes jointed, several-seeded.—Sp. 100; 15 in *Fl. B. Ind.*

Pinnæ 1 pair . . . . 1. P. GEMINATUM.
Pinnæ 2–4 pair.
  Lflts. 5–8 pair . . . . 2. P. UMBELLATUM.
  Lflts. 1–3 pair . . . . 3. P. BIGEMINUM.
  Lflts. 13–20 pair . . . . . . 4. P. SUBCORIACEUM.

1. **P. geminatum**, *Benth. in Lond. Journ. Bot.* iii. 202 (1844).
Thw. Enum. 100. *Calliandra* (?) *geminata*, Benth. in Trans. Linn. Soc. xxx. 548. C. P. 1531.
Fl. B. Ind. ii. 303. Hook. Ic. Plant. t. 1510.

A small bushy tree with smooth grey bark, young branches slender, pubescent; l. small, stip. spinous, persistent, at length ¾ in., straight, very sharp, dark brown, pubescent, rachis very short ⅛–½ in., pubescent, with stalked erect gland at end, pinnæ 1 pair, about 1 in., slender, pubescent, lflts. 2–10 (1–5 pair), sessile, unequal, ½–¾ in., oblong, unequal at base, obtuse, mucronate, dark green, glabrous and shining, with conspicuous veins; fl. sessile, crowded, heads (with stam.) 1½ in. wide, peduncles slender, pilose, 1–3 from axils of l.; cal. shallowly campanulate, glabrous, segm. widely triangular; cor. campanulate, segm. ovate acute; stam. exserted ½–¾ in. beyond cor.; pod 2–4 in. by ⅜ in. wide, shortly stalked, much curved, often twisted, pointed, flat, usually much constricted (almost moniliform) between the seeds, dark brown, glabrous, shining, opening by ventral suture only, seeds about 8.

Dry region; common. Fl. Sept.–Nov.

Endemic. The Fl. Brit. Ind., following Beddome, gives also Peninsular India, but I have seen no specimens thence.

First collected by Koenig. Bentham has referred this latterly, with a doubt, to *Calliandra*, not having seen the pod, which is, however, quite that of *Pithecolobium*.

P. dulce, Benth., the 'Madras Thorn' of the English in Ceylon, is much planted for hedges and as a shade-tree in towns, and was, doubt-

less, a very early introduction. It is figured in Bedd. Fl. Sylv. t. 188, and is a native of Tropical America. There are large old trees in Colombo and Galle forts.

2. **P. umbellatum,** *Benth. in Lond. Journ. Bot.* iii. 202 (1844). **Iyamalai, Ichavalai,** *T.*

Mimosa umbellata, Vahl, Symb. ii. 103. Thw. Enum. 100. C. P. 1530. Fl. B. Ind. ii. 303.

A small tree with rather smooth grey bark, lateral twigs often ending in a spinous point, young parts glabrous; l. rather small, rachis about $\frac{3}{4}$ in., glabrous or pubescent with a gland between insertion of each pair of pinnæ, stip. short, acute sometimes spinous, often absent, pinnæ 2 pair, $1\frac{1}{4}$–$1\frac{1}{2}$ in., lflts. 10–16 (5–8 pair), sessile, closely placed, $\frac{1}{2}$–$\frac{5}{8}$ in., oblong, very obtuse, glabrous on both sides, the terminal pair broader and approximated; fl. on glabrous ped., umbels on peduncles about 1 in. long; cal. tubular-funnel-shaped, glabrous, segm. very short, triangular; cor. twice as long as cal., puberulous, segm. lanceolate, acute; stam. exserted $\frac{1}{2}$ in. beyond cor., pod 4–5 in. by $\frac{5}{8}$ in. wide, shortly stalked, curved nearly into a circle, not twisted, strongly constricted between seeds (almost moniliform), glabrous and shining, ultimately breaking up into 1-seeded indehiscent joints; seeds 7–10, very flat, nearly circular.

Dry and intermediate country; rare. Jaffna; Arippu; Mannar; Teldeniya. Fl. Sept.–Nov.; creamy white.

Also in Southern India and Malay Islands.

First collected by Kœnig. Turns black in drying. Readily distinguished by its jointed indehiscent pod. *Mimosa nitida*, Vahl, is probably according to Benth. (l. c. 583) this species; the specimen in Vahl's Herb. is from Ceylon.

P. Saman, Benth. (*Inga Saman*, Willd.), a native of Central and Tropical S. America, whence it was introduced into Jamaica, where it is called 'Guango,' has been very much planted as a shade-tree by roads and in public places. It was introduced to Ceylon about 1851, and there are very large trees in Peradeniya planted in that year. The pod is straight and indehiscent, with a sweet pulp round the seeds, and it scarcely fits well in the genus *Pithecolobium*. It is often called the 'Rain-tree,' and grows with great rapidity to its full size.

3. **P. bigeminum,** *Benth. in Lond. Journ. Bot.* iii. 206 (1844). **Kalatiya,** *S.*

Fl. Zeyl. n. 218. *Mimosa bigemina*, L. Sp. Pl. 517. Thw. Enum. 100. C. P. 644.

Fl. B. Ind. ii. 303. Hort. Malab. vi. t. 12.

A moderate-sized tree, with thin, smooth brown bark, young parts glabrous; l. rather large without stip., main rachis 4–6 in., glabrous, channelled above, with an oval gland near the base and another between bases of upper pair of pinnæ, pinnæ 2 (rarely 3) pair, unequal, lowest pair very much

the smallest, distant, horizontal, rachis thickened at base, with an oval gland just below insertion of each pair of lflts. except the lowest, lflts. large, shortly stalked in lowest pinnæ usually 2 (1 pair) rarely 4 or 6 (2 or 3 pair), 2½–3 in., in upper pinnæ usually 6 (3 pair) 4–5 in. the terminal pair much the largest, all oval or lanceolate, acute at base, caudate-acuminate, glabrous, thin, dark green; fl. sessile, 2–4 together in little pedunculate clusters, arranged on long branches of slender pubescent panicles rather shorter than l.; cal. campanulate, pubescent, segm. short, deltoid; cor. 3 or 4 times as long as cal., segm. lanceolate, acute; stam. tassel-like, exserted for ½ in. beyond cal.; pod 3–5 in. by ¾ in. wide, flat, strongly curved into a ring or spiral, bluntly pointed, rough but glabrous, not indented bet. seed, reddish-brown, bright red within, 5–8-seeded.

Moist region up to 4000 ft. or more; common. Fl. June; cream-coloured.

Also in India.

The S. name given to his specimen by Hermann is 'Ulhanda.'

The wood is poor and light, the heart-wood scanty or wanting altogether.

4. **P. subcoriaceum,** *Thw. Enum.* 100 (1859). **Miminimara,** *S.*

Thw. Enum. 100. C. P. 337.

Fl. B. Ind. ii. 305. Bedd. Fl. Sylv. t. 189 (*P. anamallayanum*).

A large tree, with smooth thin grey bark and spreading branches, branchlets covered with very fine brown pubescence; l. numerous, crowded, rachis 2–3 in., stout, pubescent, with 2 distant sessile glands below lowest pair of pinnæ and one below each of the upper pairs; pinnæ 2–4, usually 3 pair, 3–4 in., the uppermost the longest; lflts. 26–40 (13–20 pair), sessile, ½–⅝ in., obtuse, oblique, the upper side dilated at base, margin reflexed, glabrous above, pilose beneath, rather thick and stiff; fl. sessile, heads lax on short peduncles, arranged in pyramidal terminal panicles, bracts small, fulvous-pubescent; cal. tubular, densely pubescent, segm. short triangular; cor. twice as long as cal., pod shortly stalked, curved into a circle, puberulous, orange-yellow within, seeds 5–7, jet-black.

Montane zone, 4000–6000 ft.; common. Fl. March, August; greenish-white.

Also in mountains of S. India; if *P. anamallayanum*, Bedd., be the same species, as Bentham considers.

Turns black in drying. Wood yellowish, light, soft, smooth.

XLV.—ROSACEÆ.

HERBS, shrubs or trees, l. alt., simple or compound, with stip.; fl. bisexual (rarely polygamous) regular; cal.-tube free from (in *Photinia* adnate to) ov., segm. 4–6, sometimes with small adnate bractlets (epicalyx) outside; pet. 4–6 or 0; stam. def. or indef., perigynous; carp. 1–3 or indef., usually distinct and free though often enclosed in cal.-tube (adnate to it in *Photinia*), style often basal, ovules 1 or 2; fruit various, indehiscent, usually of dry (in *Rubus* pulpy) achenes, in *Photinia* berry-like; seed without endosperm, cotyledons plane-convex.

Carp. not included in cal.-tube.
  Carp. solitary; trees (*Pruneæ*) . . . . . 1. PYGEUM.
  Carp. numerous.
    Carp. drupaceous; shrubs . . . . . 2. RUBUS.
    Carp. dry (achenes); herbs . . . . . 3. POTENTILLA.
Carp. included in cal-tube, but not adnate to it (*Poterieæ*).
  Pet. 0.
    L. simple . . . . 4. ALCHEMILLA.
    L. pinnate . . . . 5. POTERIUM.
  Pet. 5 . . . . 6. AGRIMONIA.
Carp. adnate to cal.-tube (inferior) (*Pomeæ*) . . 7. PHOTINIA.

This is an Order mainly of temperate distribution, and all our 12 species, with the exception of *Pygeum zeylanicum*, are montane plants. *Rubus moluccanus* also extends downwards into the moist region as low as 1000 ft. No species occurs in the dry region. All the genera are British, except *Photinia* and *Pygeum*.

1. **PYGEUM,** *Gaertn.*

Trees, l. simple, entire, with 2 glands at base, stip. minute, fl. small, in axillary racemes; cal.-tube obconical, segm. 5 or 6; pet. very small, 5 or 6 tomentose; stam. 12–20 or more, perigynous, spreading; carp. solitary, free, ovules 2, pendulous, style terminal, stigma capitate; fruit transversely oval, 2-lobed, indehiscent, pericarp thin, dry; seed solitary with large hemispherical cotyledons.—Sp. 20; 16 in *Fl. B. Ind.*

L. quite glabrous; stam. 20 or more; ov. glabrous . 1. P. WIGHTIANUM
L. hairy on veins beneath; stam. 12; ov. hairy . 2. P. ZEYLANICUM.

1. **P. Wightianum,** *Bl. Mel. Botan.* 2 (1855).
Polyodontia zeylanica, Wight, Ill. i. 203. Thw. Enum. 102. C. P. 638.
Fl. B. Ind. ii. 319. Wight, Ic. t. 256 (*Polyodontia zeylanica*) from a Ceylon specimen. Bedd. Fl. Sylv. t. 59 (*P. zeylanicum*).

A moderate-sized tree, bark rather rough, pale brown, young shoots slightly adpressed-pubescent; l. 3–6 in., broadly oblong-oval, rounded at base, obtuse, entire, glabrous on both sides, thick, with 2 large round or oval immersed glands one on either side of midrib near its base, petiole about ½ in., stout, furrowed, fl. about ½ in. wide, ped. longer than cal., spreading, racemes numerous, erect, narrow, stout, 3–4 in. long, finely pubescent, cal. pubescent, segm. usually 5; pet. oval, villous on margins, stam. 20 or more, much exceeding pet.; ov. glabrous; fruit about ⅝ in. wide by ⅜ in. long, somewhat didymous, apiculate, glabrous, pericarp thinly coriaceous.

Var. β, **parvifolium,** *Thw.* C. P. 1596.

L. 2–3 in., more rigid, margins often recurved, sometimes lanceolate, acute; racemes 1–1½ in., fl. smaller, on shorter ped.

Montane zone, above 4000 ft.; common; and occasionally at somewhat lower elevations. Fl. August–October; white, sweet-scented.
Also on the hills of S. India.

2. **P. zeylanicum,** *Gaertn. Fruct.* i. 218 (1788). **Golu-mora, Kankumbal-kétiya,** *S.*
Polyodontia Walkerii, Wight, Ill. i. 203. *Pygeum Walkerii*, Bl. Mel. Bot. n. 2. Thw. Enum. 102. C. P. 1532.
Fl. B. Ind. ii. 321. Gaertn. Fruct. i. t. 46, f. 4 (fruit only).

A large tree, with smooth grey bark, branchlets with numerous large linear lenticels, young shoots densely velvety with yellow silky hair; l. rather large 5–7 in., ovate-oval, rounded at base, acuminate, subacute, glabrous above, hairy on the prominent veins beneath, entire, stiff, with 2 basal glands as in the last, petiole short, stout; fl. about ½ in., ped. woolly, scarcely longer than cal., racemes numerous, 2–4 in., erect, narrow, rufous-tomentose; cal. woolly-pubescent, segm. usually 6, shortly acuminate; pet. 6, very woolly; stam. usually 12; ov. hairy; fruit ⅜–1 in. wide by ⅝–¾ in. long, not apiculate, rusty-pubescent becoming glabrous.

Moist low country, rather common. Fl. Feb.; creamy white.
Endemic.
The pet. are difficult to distinguish from the cal.-segm. Wood close-grained, rather heavy; yellow. The seeds when bruised have a strong odour of prussic acid.
In drying, the leaves of both species turn a dark coppery brown.

2. **RUBUS,** *L.*

Prickly shrubs with long sarmentose stems, l. simple or compound, stip. petiolar or cauline, fl. in axillary and terminal

corymbose panicles; cal. persistent, segm. 5, large, valvate; pet. 5, imbricate; stam. indefinite; carp. numerous on a convex receptacle, style subterminal; fruit of numerous small crowded drupes, stone hard, woody; seed pendulous.—Species variously estimated, say 200; 41 in *Fl. B. Ind.*

L. simple.
  Pet. $\frac{1}{3}$ length of cal.-segm . . . . . . 1. R. GLOMERATUS.
  Pet. more than $\frac{1}{2}$ length of cal.-segm . . . 2. R. MOLUCCANUS.
L. 3-foliolate . . . . 3. R. ELLIPTICUS.
L. imparipinnate . . . . 4. R. LASIOCARPUS.

1. **R. glomeratus,** *Bl. Bijdr.* 1111 (1826).
R. micropetalus, Gardn. in Calc. Journ. Nat. Hist. viii. 6. *R. rugosus*, var. β, Thw. Enum. 101. Trim. Syst. Cat. 30. C. P. 1536, 1537.
Fl. B. Ind. ii. 328.

Stems slender with few small hooked prickles, at first covered with cinnamomeous tomentum, afterwards glabrous, l. simple, 3–5 in., rather narrower than long, deeply cordate at base, acute, 3- or obscurely 5-lobed at base, with usually acute lobes, irregularly dentate-serrate, hairy on the veins above, densely felted with fine pale cinnamon-coloured tomentum beneath and with the reticulate venation very prominent, petiole $1\frac{1}{2}$–$2\frac{1}{2}$ in., stip. deeply pectinate with filiform segm.; fl. crowded in small short racemose clusters on short stout peduncles in axils of upper l. and of pectinate bracts, the whole forming an elongated tomentose panicle; cal. densely covered with cinnamomeous hair, segm. entire or slightly toothed near apex, pubescent within; pet. very small, about $\frac{1}{3}$ length of cal.-segm., rounded; fruit very small, purplish-red.

Upper montane zone; rather common. Fl. Jan.-June; white.
Also in Malaya, but not recorded from Indian Peninsula.
Blume's description is very brief, and the pet. are not described, but it appears to apply well to our plant, which is, however, perhaps but a variety of *R. moluccanus*.

2. **R. moluccanus,** *L. Sp. Pl.* 1197 (1753). **Wel-buté,** *S.*
Moon Cat. 40. *R. rugosus*, Sm., Thw. Enum. 101. C. P. 2765.
Fl. B. Ind. ii. 330. Wight, Ic. t. 225.

Stems stout, densely covered with woolly grey or yellowish hair and set with numerous strong hooked prickles; l. simple, $3\frac{1}{2}$–5 in., usually about as broad as long, cordate at base, acute, more or less deeply 5- (or 7-) lobed with obtuse or subacute lobes, unequally dentate-serrate, glabrous or hairy on veins and bright green above, very hairy and more or less yellowish or grey beneath with prominent reticulate venation and often with prickles on the main veins, petiole long,

1½–2½ in., very hairy, with prickles beneath, stip. large, ovate, deeply pectinate, very silky, enclosing the buds, caducous; fl. in elongated terminal panicles, on long stout ped., bracts oval, toothed or pectinate at end only; cal. densely silky-hairy, segm. entire or pectinately toothed at end; pet. fully half as long as cal.-segm.; fruit bright red or dull purplish-red.

Var. β, **Fairholmianus,*** *Gardn.* l. c. 7 (sp.). *R. rugosus*, var. γ. Thw. l. c. C. P. 135.

Stems with few nearly straight prickles, tomentum nearly white; l. very rugose above; fruit of very numerous carp., dark purple.

Var. γ, **macrocarpus,** *Gardn.* l. c. 7 (sp.). *R. rugosus*, var. δ. Thw. l. c. C. P. 1535.

Prickles nearly straight, tomentum cottony, cinnamomeous; l. very rugose above; fruit of numerous very large juicy carp., black.

Moist country at all elevations above 1000 ft.; very common; vars. β and γ only in upper montane zone. Fl. all the year; white; vars. β and γ, bright pink.

Common throughout India and Malaya.

This is a very variable species in the hill districts; and the two varieties given were considered separate species by Gardner. The fruit of var. γ is the only real "*Black*berry" in Ceylon, it is large and juicy, and when quite ripe has a good flavour.

3. **R. ellipticus,** *Sm. in Rees' Cyclop.* xxx. (1815?).

R. flavus, Ham., Thw. Enum. 101. *R. Gowreephul*, Roxb., W. and A. Prod. 298. C. P. 2596.

Fl. B. Ind. ii. 336. Wight, Ic. t. 230 (*R. Gowreephul*).

Stems flexuose, finely pubescent and also clothed with numerous long red horizontal hairs and scattered stout hooked prickles; l. pinnately 3-foliolate, rachis 2–2½ in., cylindrical, armed as the stem, stip. obviously petiolar, ½ in., linear-filiform, erect, lflts. very shortly stalked, 2–3 in., broadly oblong-oval or rotundate, obtuse or abruptly acute, sharply serrate, glabrous above, densely and finely white-pubescent beneath with the lat. veins prominent; fl. rather small, on long ped., in copious, dense, pubescent, axillary and terminal panicles, bracts linear; cal.-segm. acute, mucronate, densely pubescent; pet. a little longer than cal.-segm., obovate; fruit globular, of very numerous carp. which are covered with a few long hairs, deep yellow, slightly juicy, stone rugose.

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* Dedicated to W. Fairholme, Esq., who accompanied Mr. Gardner on a journey to Adam's Peak in 1846, when they were lost for five days in the forest.

Montane region; common. Fl. all the year; pure white, anthers cream-colour.

Also in Western Himalayas, Burma, &c.

This may be the *R. paniculatus* of Moon Cat. 40, from Maturata.

Though this species is very similar to the Blackberries of Europe, its deep yellow finely hairy fruit is scarcely edible.

4. **R. lasiocarpus,** *Sm. in Rees' Cyclop.* xxx. (1815).
R. parvifolius, Moon Cat. 40. Thw. Enum. 101. C. P. 1533.
Fl. B. Ind. ii. 339. Wight, Ic. t. 232.

Stems erect, glabrous but covered with a fine white pinkish or blueish "bloom" easily rubbed off, armed with large nearly straight compressed prickles; l. imparipinnate, rachis $3\frac{1}{2}$–5 in., stout, horizontal, flexuose, with numerous hooked prickles, furrowed above, stip. rather small, linear, silky, lflts. 5–9 (2–4 pair and end one), shortly stalked, lanceolate-oval or ovate, acute or rounded or cordate at base, acute at apex, coarsely and irregularly serrate, glabrous above, very white with fine cottony tomentum beneath; fl. in long pubescent ped. in small short axillary and terminal corymbs, bracts filiform; cal.-segm. very acute, aristate, woolly on both sides; pet. rounded; fruit rather large, $\frac{1}{2}$ in. or more, carp. numerous, fleshy, pink, densely covered with fine white pubescence.

Var. β, **subglaber,** *Thw. l. c.* *R. leucocarpus*, Arn. Pug. 16. C. P. 1534.

Lflts. smaller, broadly ovate, not white beneath but glabrous save for scanty hair on the veins.

Montane region, 3000-6000 ft. or more; common. Var. β, Nuwara Eliya. Fl. throughout the year, pink.

Also throughout India and in Java.

There are two forms, large and small-flowered, the former being met with at the higher elevations only.

This is known as the 'Wild Raspberry,' which it much resembles; the fruit, however, has no flavour, and is besides covered with a woolly coat, which renders it inedible.

Fragaria vesca, L. Walker-Arnott, in Pug. 16, say she has seen badly dried specimens from Ceylon gathered at 6000 ft. And about Nuwara Eliya patches of so-called 'wild' strawberries are to be found occasionally, but only, I think, as escapes from cultivation.* About Ootacamund in the Nilgiris, however, a wild strawberry, *F. nilgerrensis*, Schldl., is said to be very common, and is figured (as *F. elatior*) in Wight, Ic. t. 988; but our plant does not agree with this, but with the common wild strawberry of England.

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* I am informed that the first wild strawberries noticed at N. Eliya came up in a Cinchona clearing made in 1864, but Arnott's must have been collected at a much earlier date.

3. **POTENTILLA,** *L.*

Herbs, l. compound, stip. adnate to petiole, fl. in cymose panicles; cal. with 5 segm., persistent, with 5 adnate bractlets outside (epicalyx); pet. 5; stam. indef.; carp. indef., distinct, style basal or terminal, ovule solitary, pendulous; fruit composed of numerous very small dry indehiscent achenes.—Sp. 120; 39 in. *Fl. B. Ind.*

L. imparipinnate . . . . 1. P. MOONIANA.
L. palmately 5-foliolate . . . . 2. P. KLEINIANA.

1. **P. Mooniana,** *Wight, Ic.* i. t. 233 (1840).
Thw. Enum. 101. C. P. 2767.
Fl. B. Ind. ii. 349. Wight, l. c. (no petals): from a Ceylon specimen.

A perennial herb with a stout woody rootstock and long stout, prostrate, very hairy branches often rooting at the nodes; l. large, in a rosette at top of rootstock, and distant on the branches, imparipinnate, rachis stout, very hairy, usually 3–4 in. (sometimes much longer), stip. acuminate, $\frac{3}{4}$ in., membranous, lflts. numerous, sessile, very unequal in size, usually in alternately larger and smaller pairs, larger ones $\frac{1}{2}$–1 in., oval, obtuse, coarsely serrate, with bristle-tipped serrations, nearly glabrous above, silvery-silky on the veins beneath, plicate, smaller ones about $\frac{1}{4}$ in., rotundate; flowering branches erect from leaf-axils, 6–12 in., bearing the fl. on long, slender, hairy, stiff ped. in a lax terminal irregularly dichotomous panicle; cal.-segm. oval, acute, hairy, bractlets similar but rather shorter, pet. orbicular, longer than cal.-segm.; achenes very numerous, smooth, on a hairy receptacle.

Upper montane zone; rather rare. Nuwara Eliya; Totapella; Horton Plains; Pedurutalagala. Fl. July, August; yellow.

Also in the Himalaya, but not in S. Indian mountains.

2. **P. Kleiniana,** *W. and A. Prod.* 300 (1834).
Thw. Enum. 102. C. P. 2768.
Fl. B. Ind. ii. 359. Wight, Ill. t. 85.

Annual, stems numerous, prostrate but not rooting, slender, hairy; l. palmately 5-foliolate, the radical ones on very long petioles, the stem ones on much shorter hairy petioles, stip. $\frac{1}{2}$ in., lanceolate, acute, glabrous, lflts. unequal, nearly sessile, $\frac{1}{2}$–1$\frac{1}{4}$ in. (terminal the largest), oval or spathulate-oval, acute at base, obtuse, deeply toothed, glabrous above, silky on veins beneath; fl. smaller, but arranged much as in the last, cal.-segm. and bractlets with a few long hairs; pet. scarcely exceeding cal., achenes on a glabrous receptacle, deeply wrinkled.

Upper montane zone; rather common. Fl. April, September, October; yellow.

Also in the Himalaya and Nilgiris; and in Yunan, Java, and Japan.

4. **ALCHEMILLA,** *L.*

Perennial herb with prostrate stems, l. simple, with large petiolar stip., fl. minute, in corymbose cymes; cal. campanulate with 4 adnate bractlets outside, segm. 4; pet. 0; stam. 4; disk at mouth of cal.-tube large and thick; carp. 1, free, style basal; fruit a single achene enclosed in persistent cal.-tube.—Sp. 30; 2 in *Fl. B. Ind.*

A. indica, *Gardn. in Calc. Journ. Nat. Hist.* viii. 8 (1847).
A. vulgaris, Arn. Pug. 16 (non L.). *A. vulgaris*, L., var. *sarmentosa*, Thw. Enum. 102. C. P. 2770.
Fl. B. Ind. ii. 361. Wight, Ic. t. 229 (*A. vulgaris*).

A perennial herb with a semi-woody erect rootstock clothed with remains of sheathing stip., stems numerous, very long, prostrate, with abundant spreading hair; l. numerous, suborbicular, the basal ones $1\frac{1}{2}$–$2\frac{1}{4}$ in., the stem ones 1–$1\frac{1}{2}$ in., cut into 7–9, shallow, rounded lobes, sharply crenate-serrate, silky-hairy on both sides but especially beneath which is silvery white, plicate in bud, petiole variable in length, very long in basal l., covered with long spreading hair, stip. very large, connate below into a tube surrounding the stem, the free part oblong-lanceolate, acute, often toothed at the end, hairy, membranous or herbaceous; fl. very small, on short ped., cymes small, rather dense, on erect hairy peduncles from axils of stem-l., bracts numerous, ovate, often toothed; cal. villous with white hairs.

Var. β, **sibthorpioides,** *Hk. f.* l. c. 361.

"Very slender, l. $\frac{1}{2}$– in. diam., cymes panicled."

Upper montane zone; rather common. I have not seen var. β, which was collected by Gardner. Fl. April; yellowish-green.

Occurs also in the Nilgiris Pulney Hills.

When very luxuriant the leaves are 9–11-lobed, with the lobes overlapping. Wight, followed in Fl. Brit. Ind., quotes '*A. zeylanica*, Moon' for this, but there is no such name in his Cat., and this high mountain plant could scarcely have been known to him.

5. **POTERIUM,** *L.*

Erect perennial herb, l. imparipinnate, stip. petiolar, fl. small, polygamous, nearly sessile in small dense terminal heads; cal. with a top-shaped persistent tube, and 4 petaloid

deciduous segm.; pet. 0; stam. 4 or 2; carp. 1–3; ripe carp. solitary, enclosed in hardened cal.-tube.—Sp. 20; 5 in *Fl. B. Ind.*, but no species is known from the Indian Peninsula.

P. indicum, *Gardn. in Calc. Journ. Nat. Hist.* viii. 10 (1847).
Thw. Enum. 102. C. P. 2771.
Fl. B. Ind. ii. 363.

An erect perennial herb, 2–3 ft., stems glabrous, striate; l. pinnate, rachis 3–6 in., glabrous, sheathing at base, lflts. shortly stalked, about $\frac{1}{2}$ in., broadly oval, with a few large teeth, nearly glabrous; head of fruit small, $\frac{3}{8}$ in., globular, on very long erect peduncle, bracts rounded ciliate, ripe carp. enclosed in persistent cal.-tube which is about $\frac{1}{8}$ in., trapezoid-ovoid, hard, with 4 narrow wings.

Montane zone; very rare. This has apparently been twice gathered, first on 'Adam's Peak, 1835,' by Mr. H. de Alwis, from whose specimens in Hb. Perad. (now C. P. 2771) Gardner described the species; and afterwards, in 1839, by Sir J. A. Stewart Mackenzie,* Governor of Ceylon, whose excellent specimens, without definite locality, are now in Hb. Kew. Subsequent search for it has been vain.

Endemic.

There is some doubt as to the locality of these specimens, and I suspect all are really from the same gathering. My material in Hb. Perad. is very scanty, and I am unable to give a full description.

Rosa. There is no wild species of Rose in Ceylon.

6. AGRIMONIA, *L.*

Erect perennial herb, l. interruptedly imparipinnate, stip. petiolar, fl. small, in spikelike racemes; cal. persistent and enlarged in fruit, tube turbinate, with 3 whorls of hooked spines round the top, segm. 5; pet. 5; stam. usually 5; disk thick, nearly closing mouth of cal.-tube; carp. 2 at base of cal.-tube, styles terminal; fruit of 2 (or 1) achenes enclosed in hardened enlarged cal.-tube.—Sp. 8; 3 in *Fl. B. Ind.*, but no species in Peninsular India.

A. zeylanica, *Moon Cat. Ceyl. Pl.* 37 (1824).
A. Eupatorium, Thw. Enum. 102; Arn. Pug. 16. C. P. 2769.
Fl. B. Ind. ii. 362. Wight, Ic. t. 224 (*A. Eupatorium*) (bad).

A perennial herb about 3 ft. high, stem erect, slightly branched, villous with coarse shaggy hair; l. numerous, the radical ones often 8–10 in., the stem ones smaller and gradually passing into bracts, rachis stout, villous-hairy, stip.

* Printed as 'Sir J. G. McKenzie' in Fl. B. Ind.

large, leafy, hairy, adnate to petiole below, free part semi-hastate, deeply toothed or gashed, lflts. very unequal, the larger ones $\frac{3}{4}$–$1\frac{1}{2}$ in., very broadly oval or subrotundate, obtuse, coarsely toothed, silky-hairy on both sides, especially beneath, the smaller ones often minute; fl. very shortly stalked, distant, in very long erect terminal spikes, each in axil of toothed leafy bract; cal.-segm. acuminate; pet. oval-oblong; styles exserted, stigma bilobed; cal.-tube in fruit strongly grooved hairy, spines erect, glabrous, red.

Montane zone, 4000–7000 ft., in grassy or bushy places; rather rare, though locally plentiful, especially in Uva Province. Fl. Feb.–April; yellow.

Endemic.

This is very close to the common *A. Eupatorium* of Europe, but is a sufficiently well-marked local variety to deserve a name. It is remarkable that it does not occur in the S. Indian hills.

7. **PHOTINIA,** *Lindl.*

Trees, l. simple, with subulate deciduous stip., fl. small, in terminal corymbs; cal.-tube adnate to ov., segm. 5; pet. 5; stam. 15 or 20; ov. inferior, 2-celled, with 2 ascending ovules in each cell, styles distinct, stigmas dilated; fruit a small berry-like pome, flesh scanty, endocarp membranous; seeds 2 with a leathery testa.—Sp. 8; 5 in *Fl. B. Ind.*.

P. Notoniana, *W. and A. Prod.* 302 (1834).
Thw. Enum. 100. C. P. 136.
Fl. B. Ind. ii. 380. Wight, Ill. i. t. 86; Ic. t. 991. Bedd. Fl. Sylv. t. 192.

A small tree with wrinkled bark, young parts glabrous; l. 4–6 in., oval or lanceolate, tapering to or rounded at base, acuminate, acute, entire, somewhat undulate, glabrous on both sides, thin, rather stiff, shining above, paler beneath, petiole long, 1–$1\frac{1}{4}$ in.; fl. small, $\frac{1}{6}$ in., numerous, on glabrous ped., corymbs terminal, much branched, quite glabrous; cal. glabrous, segm. triangular; pet. broadly oval or rotundate, distant, clawed; fruit less than $\frac{1}{4}$ in., capped with remains of cal.-teeth, glabrous, red-purple; seeds compressed, pointed at both ends.

Upper montane zone, to highest elevations; rather rare. Fl. March, April; pinkish-white, slightly scented.

Also in the Nilgiris, and mountains of Khasia, Martaban, and Java.

The only Ceylon member of the apple tribe; the little berry-like fruit has a harsh, bitter flavour.

XLVI.—SAXIFRAGACEÆ.

HERBACEOUS, l. opp., without stip., fl. small, regular; cal.-tube completely adnate to ov., segm. 5; pet. 5; stam. 5, epigynous; ov. completely inferior, 1-celled, with 2 pendulous placentas, ovules numerous, styles 2, distinct; fruit a capsule, dehiscing septicidally from apex; seeds numerous, very small, with endosperm.

A single annual herb very badly represents this large Order. There is no species of *Saxifraga* in our hills or in the Nilgiris, but 35 are given in Fl. B. Ind. for the Himalaya range.

VAHLIA, *Thunb.*

For characters, see Order.—Sp. 33; 2 in *Fl. B. Ind.*

V. oldenlandioides, *Roxb. Fl. Ind.* ii. 89 (1832).
Thw. Enum. 130, 418. C. P. 1686, 1687.
Fl. B. Ind. ii. 399. Wight, Ic. t. 562.

Annual herb with a long tap root and a short erect central stem and many spreading or prostrate ones, glabrous or very finely glandular-pubescent; l. small, $\frac{3}{4}$–$1\frac{1}{2}$ in., sessile, linear-strap-shaped, tapering at both ends, acute, glabrous or puberulous; fl. small, numerous, on short slender ped., usually 2 at end of slender glandular-pubescent axillary and terminal peduncles as long as l.; cal. finely glandular-pubescent, segm. short triangular, persistent, pet. oblong, about as long as cal.-segm.; capsule $\frac{1}{6}$ in., subglobose, crowned with cal.-segm.; seeds very minute and numerous.

Dry region; apparently very rare. Jaffna, frequent. Fl. Feb., March; white.

Dry or desert districts of India, Persia, and Trop. Africa.

Easily mistaken for an *Oldenlandia.*

[*V. viscosa*, Roxb., given for Ceylon in Fl. B. Ind., does not occur here (see Thw. Enum. 418).]

XLVII.—CRASSULACEÆ.

PERENNIAL herbs, l. opp., simple, succulent, without stip.; fl. regular, bisexual, in paniculate cymes; sep. 4, very slightly connate at base; pet. *completely combined into a cor.* with a

long inflated tube, lobes 4, spreading; stam. 8, inserted in 2 rows on the tube of cor. (*epipetalous*); carp. 4, slightly adnate to base of cor.-tube, distinct, each with a linear scale at the base, styles long; fruit of 4 follicles; seeds very numerous, with endosperm.

KALANCHOE, *Adans.*

For characters, see Order.—Sp. 25; 6 in *Fl. B. Ind.*

Leaves oval, crenate	1. K. FLORIBUNDA.
Leaves pinnatifid	2. K. LACINIATA.

1. **K. floribunda,** *W. and A. Prod.* 359 (1834), var. **glabra,** *Clarke in Fl. B. Ind. l. c.*

Thw. Enum. 129. C. P. 540.
Fl. B. Ind. ii. 414.

A large perennial herb, 2–3 ft. high, perfectly glabrous throughout, stem erect, not branched, hollow; l. all opposite, articulated, very succulent, the lowest 4 in., gradually becoming smaller upwards, the uppermost about $1\frac{1}{2}$ in., spathulate-oval, rounded or obtuse at apex, gradually tapering to long base (? petiole), coarsely serrate-crenate, pale yellowish green; fl. numerous, ped. a little shorter than sep., arranged in large, lax flat-topped trichotomous corymbose cymes, bracts linear; sep. narrowly lanceolate, very acuminate; cor. $\frac{5}{8}$ in., tube inflated below, segm. $\frac{1}{4}$ in., very acute; follicles $\frac{3}{8}$ in., erect, narrow, beaked, at first enclosed in the white scarious persistent base of cor.-tube.

Montane zone, on rocks; rare. Hantane; Pundalu-oya (E. Green); Padanawella, Uva (Nock); face of the hill opposite Hakgala towards Fort Macdonald (Nock). Fl. Nov.–Jan.; orange-yellow.

Also in the Indian Peninsula.

2. **K. laciniata,** *DC. Pl. Grasses*, iii. t. 100 (1799).

Moon Cat. 32. Thw. Enum. 129, 417. C. P. 3836.
Fl. B. Ind. ii. 415 (not given for Ceylon). Wight, Ic. t. 1158.

A large succulent herb, perfectly glabrous throughout, stems very stout, slightly branched, pale glaucous green; l. numerous, large, very succulent, 3–4 in., on flattened fleshy petiole $1–1\frac{1}{2}$ in. long, very variable, the lowest deeply gashed, the middle ones more or less deeply pinnatifid, the uppermost with narrow almost cylindrical segm., all shining, pale glaucous-green; fl. rather large, ped. glabrous about as long as cal., cymes large, lax, paniculate not flat-topped; sep. lanceolate, acute; cor.-tube $\frac{1}{4}$ in., segm. $\frac{1}{8}$ in., oval, acute.

Lower montane zone; very rare. Matale East (Thwaites). There are no specimens of C. P. 3836 in Hb. Perad. nor any drawing. Moon

gives 'Kandy' as locality, where it was also found by H. de Alwis. There are plants in the Botanic Gardens (of unknown origin), and from these the above description is taken. Fl. March–May; bright chrome yellow.

Also in India, Malaya, and Trop. Africa.

Bryophyllum calycinum, Salisb. (C. P. 541) is a common plant on bare rocky places throughout the low and lower montane country, and has all the look of a native. It occurs in similar places throughout the Tropics, but is believed to be originally from Trop. Africa. Mrs. Walker, in her tour in 1837 (Hook. Journ. Bot. ii. 242), says it had been then introduced only 'a few years ago.' It is called 'Akkapana,' or 'Ratagowa' by the Singhalese, and is recorded by Moon in 1824 (Cat. 32) as *Calanchoe pinnata*, with Colombo as the locality.

XLVIII.—DROSERACEÆ.

SMALL perennial herbs, l. radical or cauline fringed with glandular tentacles, stip. adherent to petioles or absent; fl. small, regular, bisexual; cal. free, persistent, segm. 5, deep; pet 5, persistent; stam. 5, *hypogynous;* ov. superior, 1-celled with 3 or 5 parietal placentæ, ovules very numerous, styles 3 or 5; fruit a dry capsule, loculicidally 3- or 5-valved; seeds very numerous, minute, black, with raised reticulations, with endosperm.

The flowers have quite hypogynous pet. and stam., and the Order is often placed near *Violaceæ*.

Of our three species one is montane, one confined to the low country, and one generally distributed.

DROSERA, *L.*

For characters, see Order.—Sp. 100; 3 in *Fl. B. Ind.*

L. radical, round-spathulate . . . . . . 1. D. BURMANNI.
L. cauline, linear. . . . . 2. D. INDICA.
L. cauline, semilunate. . . . . 3. D. PELTATA.

1. **D. Burmanni,** *Vahl, Symb. Bot.* iii. 50 (1794). **Wata-essa,** *S.*

Herm. Mus. 18. Burm. Thes. 207. *D. rotundifolia*, L., Sp. Pl. 281 (part). Fl. Zeyl. n. 120. Moon Cat. 23. Thw. Enum. 21. C. P. 1080.

Fl. B. Ind. ii. 424. Burm. Thes. t. 94, f. 2. Wight, Ill. t. 20, A.; Ic. t. 944 (not good).

A small stemless herb, l. all radical forming a close rosette on the ground, ¼–½ in., round-spathulate, tapering into a flat petiole, upper surface with numerous gland-tipped tentacles,

longest at the margin, stip. adnate to petiole, scarious, cut into long filiform laciniæ; fl. about $\frac{1}{4}$ in., on long slender ped., secund, about 8–20 at end of erect slender, glabrous scapes 4–6 in. high, 1–3 in number, from axils of inner leaves; cal. minutely papillose, segm. linear-oblong, obtuse; pet. rather longer than cal., spathulate; styles 5, undivided; capsule 5-celled, seeds reticulate.

Wet places throughout the island; common at all elevations. Fl. March, April; white.

Found throughout the Tropics of the Eastern Hemisphere.

Closely allied to the common Sundew (*D. rotundifolia*) of England.

2. **D. indica,** *L. Sp. Pl.* 282 (1753). **Kandul-essa,** *S.*

Herm. Mus. 63. Burm. Thes. 207. Fl. Zeyl. n. 121. Moon Cat. 23. Thw. Enum. 21. C. P. 1088.

Fl. B. Ind. ii. 424. Burm. Thes. t. 94, f. i. Wight, Ill. i. t. 20, f. c.

Stem weak, decumbent, slightly branched, glandular-pubescent; l. numerous, cauline, alternate, $1\frac{1}{4}$–$1\frac{3}{4}$ in., narrowly linear, strongly circinate in vernation, deflexed but again curved upwards at end when old, lower half (petiole) glabrous, rest copiously fringed with very fine gland-tipped tentacles; fl. over $\frac{1}{4}$ in. on long ascending ped., 6–8 in rather stout axillary and terminal glandular racemes longer than l.; cal.-segm. oblong-oval, subobtuse, entire, glandular-pubescent; pet. narrow, spathulate, obtuse; styles 3; seeds minute, ovoid, strongly ridged, with raised reticulation.

Low country; rather rare. Pasdun Korale; Negombo; Kurunegala; Nilgala; Jaffna (dwarf form). Fl. July; white.

Also in S. India, Burma, Malaya, and China, and in Trop. Australia and Africa.

3. **D. peltata,** *Sm. in Willd. Sp. Pl.* i. 1546 (1797).

D. lunata, Ham., Thw. Enum. 22; Moon Cat. 23. C. P. 2553.

Fl. B. Ind. ii. 424. Wight, Ill. i. t. 20, f. D. Hook. Ic. Pl. t. 54 (*D. lunata*).

Stem erect, 6–10 in. high, occasionally with a branch or two near the top, glabrous, arising from a globose, solid, smooth, red bulbil about $\frac{1}{4}$ in. diam. (a few rootlets come from base of stem above the bulbil); l. numerous, alternate, rather distant along whole length of stem, petiole very slender, spreading, curved, blade vertical, peltately attached, semi-circular with the upper edge straight or slightly concave and prolonged at the corners into long acuminate horns giving the whole a semilunate outline, tentacles very numerous, the marginal ones long and spreading, the rest short; fl. nearly $\frac{1}{2}$ in., on long ascending, slightly pilose ped., about 8 in a raceme which is at first nodding, afterwards erect; cal.-segm. ovate,

acute, laciniate or ciliate at margin, glabrous; pet. truncate much longer than sep.; ov. globose, furrowed, glabrous, with 5 placentas, styles 3, much divided into blunt processes.

Wet places in upper montane zone; rather common. Fl. April, August–November; white.

Also in India, Malaya, and Australia.

Turns black in drying, and makes a vinous-purple stain on the paper When old the plant has exhausted the bulbil, which then become shrunken, a new one being formed at its side.

XLIX.—HALORAGEÆ.

SMALL aquatic or semi-aquatic herbs, l. opp. or alt. or verticillate, fl. minute, unisexual, monœcious, axillary; male fl.:—cal. 4-fid or 0, pet. 4 or 0, stam. 1 or 4–8; fem. fl.:—cal.-tube adnate to ov. segm. 4 or 0, pet. 0, ov. inferior, 1- 2- or 4-celled, ovules 4, pendulous, styles or stigmas 2 or 4; fruit minute, indehiscent or separating into constituent carp., seeds 1–4, embryo in axis of fleshy endosperm.

Pet. of male fl. 4 . . . . 1. SERPICULA.
Pet. 0.
  Submerged water plant . . . . . 2. MYRIOPHYLLUM.
  Creeping herb . . . . 3. CALLITRICHE.

Myriophyllum is found in the dry low country, *Serpicula* and *Callitriche* in the montane zone.

1. SERPICULA, *L.*

Small decumbent much-branched herbs, l. opp. or alt., fl. minute, unisexual, monœcious, axillary, male fl. stalked, female sessile; male fl.:—cal. with short tube, segm. 4, pet. 4, stam. 8, ov. 0; fem. fl.:—cal.-tube adnate to ov. segm. 4, pet. and stam. 0, ov. inferior, 1-celled, with 4 pendulous ovules, styles 4, short, with large rayed stigmas; fruit minute, indehiscent, hard, 1-seeded.—Sp. 4; 2 in *Fl. B. Ind.*

Fruit glabrous, strongly ribbed and tubercled . . 1. S. ZEYLANICA.
Fruit pubescent, not ribbed or tubercled . . . 2. S. HIRSUTA.

1. **S. zeylanica,** *Arn. in Fl. B. Ind.* ii. 431 (1878).

Haloragis oligantha, Arn. Pug. 18 (non Wight). *S. indica* (part), Thw. Enum. 123. C. P. 146, 451, 447.

Fl. B. Ind. ii. 431.

Stems sometimes slightly woody at base, much branched, decumbent, ascending or even erect, stout, glabrous; l. very

numerous, close, usually alt., articulated with stem and leaving a prominent scar, usually narrowly linear, acute, entire or with a few large sharp teeth in upper part, glabrous, sometimes cuneate-obovate, with minute teeth and ciliate; ped. of male fl. not longer than l., very slender, glabrous; fruit minute, oblong-oval, narrowed above, glabrous, strongly 8-ribbed, with the ribs tuberculated.

Var. β, **minor,** *Clarke in Fl. B. Ind.* l. c.

A minute plant, $1\frac{1}{2}$–3 in., with filiform stems, l. opposite, very small.

Upper montane zone; very rare. On Adam's Peak, where it is abundant near the base of the uppermost cone; Maturata. Var. β, Wattekelle, 1864. Fl. March, &c.

Endemic.

Thwaites did not distinguish this from the next, and called the combined plants *S. indica;* and this is perhaps the best treatment. C. P. 451, with the fruit of *S. zeylanica*, has the leaves of *S. hirsuta*, and looks quite intermediate; var. β seems to be merely a dwarf state of this form.

2. **S. hirsuta,** *W. and A. Prod.* 338 (1834).

S. brevipes, W. and A., Arn. Pug. 18. *S. indica*, Thw. Enum. 123 (part); Trim. Syst. Cat. 31. C. P. 1545.

Fl. B. Ind. ii. 431 (*S. indica*). Wight, Ic. t. 1001.

Stems prostrate, wide-creeping, often very long, much branched, rooting at the nodes, slender, slightly pilose, red; l. numerous, opp. or alt., nearly sessile, usually under $\frac{1}{2}$ in., tapering to cuneate base, oval or obovate-oval, with a few large teeth in upper half, glabrous on both sides, ciliate on margin, often red beneath; male fl. few, on very slender, pubescent ped. longer than l. ($\frac{1}{4}$–$\frac{3}{8}$ in.), fem. fl. sessile, in axillary clusters; male fl.:—cal.-segm. acute, pet. oblong, concave, pubescent outside, soon falling, anth. large, cream-coloured; fem. fl.:—cal.-segm. triangular, pubescent, stigmas spreading; fruit very minute, broadly ovoid or subglobular, not ribbed, pubescent.

Moist open ground, especially near streams in the montane zone above 4000 ft.; very common. Fl. all the year; pinkish.

Also in the mountains of S. India.

As *S. hirsuta* and *S. brevipes* of Wight and Arnott are not distinguishable as species, and as the names are of the same date, I adopt that most suitable to our form.

2. **MYRIOPHYLLUM,** *L.*

Submerged aquatic, l. verticillate, fl. very small, axillary, unisexual, monœcious (rarely bisexual); male fl.:—cal. minute 4-fid, pet. 4, stam. 4–8; fem. fl.:—cal.-tube connate with ov.,

segm. 4, very small, pet. 0, ov. quite inferior, 4-celled, stigmas 4, plumose; fr. of 4 nearly distinct carp.—Sp. 15; 5 in *Fl. B. Ind.*

M. indicum, *Willd. Sp. Pl.* iv. 407 (1805).
Moon Cat. 64. *Haloragis oligantha*, Wight, Ic. iii. pt. 4, 3. Thw. Enum. 123. C. P. 1549.
Fl. B. Ind. ii. 433. Wight, Ic. t. 1061.

A submerged water-herb, stems long, much branched, stout, glabrous, the upper portion often floating on the surface; l. very numerous, in whorls of 2–5 (usually 4), $\frac{1}{2}$–$\frac{3}{4}$ in., the uppermost ones linear, attenuate to base, acute, nearly entire, glabrous, the intermediate ones more or less toothed or pectinate, the lowest ones entirely cut into narrow filiform segm. looking like branched rootlets; fl. sessile, male in the upper axils, female in the lower ones, and a few bisexual ones between them; stam. generally 6, as long as pet.; fruit depressed of 4 nearly globular lobes (carp.), glabrous, bluntly muriculate.

Canals, ponds, and tanks in the dry region; rather common. Jaffna; Bintenne; Chilaw; Kalawewa. Fl. all the year.

Also in the Carnatic, Bengal, and Assam.

I have never seen anything like a spicate arrangement of the inflorescence in our plant. When left growing on mud uncovered by the water the much-divided l. are not produced. Wight's figure above quoted is good for this form, but Clarke (in Fl. B. Ind.) refers it, and also Wight, Herb. n. 942, to *M. intermedium* DC., which is, however, probably not distinguishable as a species.

Willdenow, in the original description, gives Ceylon as a locality.

3. CALLITRICHE, *L.*

Small annual herb, l. opp., fl. minute, unisexual, monœcious; cal. and pet. 0 (achlamydeous), male fl. of 1 stam., female fl. of a 4-celled ov. with 1 pendulous ovule in each cell, styles 2 long; fruit indehiscent of 4 carp. combined in 2 pair, ultimately separating.—Sp. about 10; 2 in *Fl. B. Ind.*

C. stagnalis, *Scop. Fl. Carniol.* ed. 2, ii. 251 (1772).
C. verna, Thw. Enum. 290 (non L.). C. P. 303, 3636.
Fl. B. Ind. ii. 434. Wight, Ic. t. 1947 (*C. Wightiana*).

A very small annual flaccid herb, with slender prostrate glabrous stems rooting at the nodes; l. small, opposite, $\frac{1}{4}$–$\frac{3}{8}$ in., spathulate-oval, tapering to petiole, obtuse, glabrous; fl. axillary sessile, a male and a female usually in each axil, bracts large, boat-shaped, white, soon falling; fruit very small, compressed, circular, glabrous, each carp. with a narrow wing round the edge.

Upper montane zone ; a common weed on damp ground or mud. Fl. all the year.

Found in most parts of the Old World, temperate and Tropical. The Ceylon plant is somewhat smaller than the common English form, and has a rather narrower wing to the fruit.

L.—RHIZOPHORACEÆ.

TREES or shrubs, l. opp., with large interpetiolar stip. (alt. and without stip. in *Anisophyllea*), entire, glabrous ; fl. regular, bisexual ; cal. more or less adnate to ov. (free in *Weihea*), segm. 4, 5, or 8–14, valvate ; pet. same number as cal.-segm., often cut or laciniate ; stam. double number of pet. (in *Weihea* more) perigynous or epigynous (hypogynous in *Weihea*) ; disk annular and lobed or absent ; ov. inferior or half-inferior (superior in *Weihea*), 2–4-celled, with 2 (1 in *Anisophyllea*) pendulous ovules in each cell ; fruit leathery, indehiscent, 1-seeded (dehiscent and with 4–6 seeds in *Weihea*) ; seed usually with a large macropodous embryo without endosperm, sometimes with a small embryo in axis of copious endosperm.

L. opp., with interpetiolar stip.
  Seed without endosperm, embryo germinating in the fruit (*Rhizophoreæ*).
    Pet. 4, ov. ½-inferior . . . . 1. RHIZOPHORA.
    Pet. 5, ov. ½-inferior . . . . 2. CERIOPS.
    Pet. 8–14, ov. quite inferior . . . . 3. BRUGUIERIA.
  Seed with fleshy endosperm (*Legnotideæ*).
    Ov. inferior. . . . . 4. CARALLIA.
    Ov. superior . . . . 5. WEIHEA.
L. alt., without stip. Seed without endosperm (*Anisophylleæ*) . . . . 6. ANISOPHYLLEA.

The tribe *Rhizophoreæ* are the true Mangroves, and our 6 species are found in suitable places all round the coast of the island. Of the rest, the endemic *Carallia calycina* is nearly restricted to the lower montane zone ; *Weihea* and *Anisophyllea* are low-country plants, and the latter is confined to the moist region.

1. **RHIZOPHORA**, *L.*

Moderate-sized trees, sending down numerous aërial roots from the stem and branches, l. opp. entire, thick, with large interpetiolar deciduous stip. enclosing the buds, fl. in pairs, each supported by 2 hard thick fused bracts ; cal. very deeply

divided, segm. 4, persistent, enlarged in fruit; pet. 4; stam. 8 or 11 (or 12), anth. nearly sessile, with numerous cells; ov. half-inferior, 2-celled, with 2 ovules in each cell; fruit conical, leathery, indehiscent, 1-celled, 1-seeded, perforated at apex by the large cylindrical radicle of the germinating seed.—Sp. 5; 2 in *Fl. B. Ind.*

Fl. on short ped., peduncle 1½ in. . . . . . 1. R. MUCRONATA.
Fl. sessile, peduncle ¼ in.. . . . . . . 2. R. CANDELARIA.

1. **R. mucronata,** *Lam. Encyc.* vi. 169 (1804). **Kadol,** *S.* **Kandal,** *T.*

R. Candel, Moon Cat. 36 (non L.). Arn. in Ann. Nat. Hist. i. 362. Wight, Ill. i. 209. Thw. Enum. 120. C. P. 1969.

Fl. B. Ind. ii. 435. Wight, Ic. t. 238.

A moderate-sized tree with a spreading head, branchlets thick, marked with close scars of fallen l. and stip., young parts glabrous, purple; l. 4½–5 in., oval, acute at both ends and with a strong brown point nearly ¼ in. long at apex, perfectly glabrous, thick, bright green, pale beneath and dotted with minute red spots, petiole ½–¾ in., stout, stip. 2 in., glabrous, soon falling; fl. moderate-sized, on short, very thick ped., 2 pairs together at end of stout somewhat drooping peduncles about 1½ in. long from axils of l. of same year; cal.-segm. about ½ in., oblong-lanceolate, thick, glabrous, keeled within; pet. about as long as sep., narrow, obtuse, curved, thick, induplicate, hairy within; stam. 8, anth. linear, very acute; fruit 1½–2 in., ovate-conical, pendulous, slightly rough, dark brown; embryo attaining 18 in., or even more, before falling from fruit.

Salt-water estuaries and backwaters round the whole coast. Fl. Aug., Sept.; white, sep. pale yellow.

Seashores throughout the Eastern Tropics.

A good picture of the habit of this mangrove is given in t. i. of Karsten's 'Mangrove-Vegetation' (Biblioth. Botan. pt. xxii. 1891). Moon calls this 'Ela-Kadol,' S. In drying it turns a dark purplish-brown. Heart-wood reddish, very hard. The fishermen soak their nets in the sap to make them durable.

2. **R. Candelaria,** *DC. Prod.* iii. 32 (1828). **Kadol,** *S.* **Kandal,** *T.*

R. Mangle, Moon Cat. 36 (L. in part). *R. conjugata*, Arn. l. c. 363; Thw. Enum. 120 (non L.). C. P. 1968.

Fl. B. Ind. ii. 436 (*R. conjugata*). Rheede, Hort. Malab. vi. t. 34. Karst. l. c. t. 2, f. i.

A rather smaller tree than *R. mucronata*, but otherwise very similar, l. 5–6 in., lanceolate-oval, acute at base, tapering to acute apex and very shortly mucronate, paler and slightly

dotted beneath, petiole $\frac{1}{2}$–1 in., stip. 2–3 in.; fl. sessile peduncles very short, about $\frac{1}{4}$ in., stout, from axils of fallen l.; cal.-segm. $\frac{5}{8}$–$\frac{3}{4}$ in., ovate-oblong, acute, striate externally; pet. linear, flat, glabrous, soon falling; stam. 11 (or 12); fruit about 1 in.; otherwise as in the last.

With *R. mucronata*, but rather less common. Fl. Jan., Feb.; white, sep. pale green, brown outside.

All Tropical seashores of Asia and Africa.

By common consent this has been accepted as *R. conjugata* of Linnæus, but it is not the plant of his Fl. Zeyl. n. 181 (see *Bruguiera*) nor of his Herbarium. He included the present species under *R. Mangle*, which principally referred to an American one, to which the name is now restricted. Rheede's plate above quoted certainly represents the present species rather than *R. mucronata*, for which it is quoted in Fl. B. Ind. Though easily distinguished when living, the confusion in books between the two is very great.

These two *Rhizophoras* form, with *Bruguiera gymnorhiza*, the bulk of the mangrove forests of the coast. The bark of all is used for tanning in Ceylon, and is exported to India in small quantity.

2. CERIOPS, *Arn.*

Small trees or shrubs, sending down aërial roots as in *Rhizophora*, and with l. and stip. of that genus; cal. deeply divided, persistent, segm. 5; pet. 5, emarginate; stam. 10, inserted between the lobes of an annular disk; ov. fully half-inferior, 3-celled, with 2 ovules in each cell, style simple, fruit as in *Rhizophora*, but the radicle of the germinating embryo sharply angled.—Sp. 3; 2 in *Fl. B. Ind.*

Pet. flat, glabrous . . . . 1. C. CANDOLLEANA.
Pet. concave, ciliate towards apex . . . . 2. C. ROXBURGHIANA.

1. **C. Candolleana,** *Arn. in Ann. Nat. Hist.* i. 364 (1838). **Chirukandal,** *T.*

Thw. Enum. 120. C. P. 1966.
Fl. B. Ind. ii. 436. Wight, Ic. t. 240.

A shrub or small tree with numerous opposite branches, twigs marked with scars of l. and stip., young parts glabrous; l. 2–3 in., obovate-oblong, tapering to base, rounded at apex, glabrous, thick, pale green; fl. small, sessile in clusters of 2 (or 3) arranged in small lax umbels on stout rather deflexed glabrous peduncles from axils of upper l. $\frac{1}{4}$–$\frac{1}{2}$ in. long; cal. glabrous, segm. oblong, subacute; pet. shorter than cal.-segm. flat, emarginate, tipped with 2 or 3 minute clavate processes, glabrous; fruit pendulous, under 1 in., cylindrical, tapering, rough, reddish-brown; embryo attaining 8–10 in. before falling.

Mangrove forests on the coast, common; Negombo; Chilaw; Kalpitiya; Trincomalie. Fl. Sept.; pet. white, sep. green.
Tropical seashores of the Old World.

2. **C. Roxburghiana,** *Arn. in Ann. Nat. Hist.* i. 363 (1838).
Fl. B. Ind. ii. 436. Karsten, l. c. t. 3, f. 1.

Scarcely differs from the last in habit and foliage, but fl. in a more dense capitate cyme; cal.-segm. subovate, rather obtuse; pet. concave, setose-ciliate towards apex; stam. often 12; fruit less tapering and embryo shorter.

In the tidal estuary of the Mahawéli River at Kottiyar, 1890 (Karsten). Also in the Sunderbuns, Andaman Islands, and coast of Burma.

Prof. Karsten informs me that he found this little tree abundantly in the above locality with the other species. I have seen no specimens. The two appear very closely allied.

[*Kandelia Rheedei*, W. and A., is given for Ceylon in Fl. B. Ind. on the faith of a doubtful specimen in Herb. Kew. It is figured in Rheede, Hort. Malab. vi. t. 35 and in Wight, Ill. i. t. 89, and may possibly occur; but I have seen no specimens.]

3. BRUGUIERA, *Lam.*

Trees or shrubs with habit and l. of *Rhizophora;* cal.-tube connate with ov. below and free above it for some distance, deeply cut into 8–14 persistent segm.; pet. 8–14, concave, deeply bilobed, with terminal appendages; stam. 16–28, two enclosed in each pet.; ov. wholly inferior, 2–3-celled, with 2 ovules in each cell; fruit crowned by the persistent cal.-limb; radicle of germinating embryo cylindrical or nearly so.—Sp. 8; 5 in *Fl. B. Ind.*

Fl. solitary ; cal.-segm. 10–14. . . . . 1. B. GYMNORHIZA.
Fl. in threes ; cal.-segm. 8 . . . . . 2. B. CARYOPHYLLOIDES.

1. **B. gymnorhiza,** *Lam. Encycl.* iv. 696 (1797).
Fl. Zeyl. n. 181. *Rhizophora conjugata*, L. Sp. Pl. 443. *R. gymnorhiza*, L., Moon Cat. 36. Thw. Enum. 120 (including *R. Rheedii.* Miq.). C. P. 3611, 3612.
Fl. B. Ind. ii. 437. Rheede, Hort. Malab. vi. tt. 31, 32. Wight, Ic. t. 239. Karsten, l. c. t. 2, f. 2.

A tree, young branches smooth, with pale bark and prominent scars of l. and stip.; l. 3½–5 in., oval, tapering to base, slightly acuminate, acute, not mucronate, glabrous, rather thick, bright green, paler beneath, with the midrib very prominent, petiole ¾–1 in.; fl. rather large, solitary, drooping, peduncle ½ in., curved, from axils of upper l.; cal. coriaceous, glabrous, tube striate, segm. 10–14 (usually 11), ½–¾ in., linear, very acute, erect; pet. 10–14, very deeply bifid, hairy at the

base, with 2 bristles at the top of each lobe and 1 in the notch, stam. 20–28 (usually 22); ov. quite inferior, 3-celled, style long; fruit about 1 in., obconical, crowned by the somewhat enlarged cal.-segm., smooth, scarlet; embryo attaining 9 in. before falling, radicle stout, fusiform, blunt, very slightly angled.

Mangrove forests; common all round the coast. Fl. December, Jan.; cal. orange-yellow.

Tropical shores throughout the Old World.

Heart-wood red, very hard and strong, but of small size.

There is no specimen in Hermann's Herb., but his drawing is unmistakably this species, and it is the *whole* foundation for Linnæus's *Rhizophora conjugata*, which name has been since always applied to another plant, *R. Candelaria*, DC., to which this bears a strong resemblance in foliage.

An excellent figure of the curious interlacement of the aërial roots of this species is given by Karsten (l. c. t. 10, f. 121).

2. **B. caryophylloides,** *Bl. Enum. Plant. Jav.* i. 93 (1830).
Kanilia caryophylloides, Bl., Thw. Enum. 120. C. P. 1965.
Fl. B. Ind. ii. 438. Rheede, Hort. Malab. vi. t. 33.

A bush or small tree branched from the base; l. 3–4 in., readily disarticulating, lanceolate-oval, tapering below, shortly acuminate, subacute, glabrous, rather thin, midrib very prominent beneath, petiole $\frac{3}{4}$–1 in.; fl. small, on very short ped., three together at end of slender peduncle about $\frac{3}{8}$ in. long from axils of upper l.; cal. glabrous, segm. usually 8, linear, subacute; pet. 8, erect, concave, hairy outside, deeply bifid, with several long bristly hairs at end of each lobe; stam. 16; ov. 2-celled; fruit small, $\frac{1}{2}$ in., oblong-ovoid, smooth, capped with reflexed cal.-segm. about half its length; embryo attaining 6 in. before falling, slender, cylindrical.

Mangrove forests; rare. Trincomalie (Gardner); Kalpitiya. Fl. July; white.

Also in S. India and Malaya.

4. **CARALLIA,*** *Roxb.*

Trees, l. opp. with large interpetiolar stip., fl. in axillary cymes; cal.-tube campanulate, connate with ov., segm. 4–8; pet. 4–8, cut or fimbriate; stam. 8–16, inserted (with pet.) outside a prominent annular crenulated disk; ov. inferior, 4-celled, with 2 ovules in each cell, stigma 4-cleft; fruit fleshy, indehiscent, 1-seeded; seed globose-reniform, with a cylindrical, curved, green embryo in axis of copious endosperm.—Sp. 7; 3 in *Fl. B. Ind.*

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* *Carallia*, from the Telugu name, Karalli.

Fl. sessile ; pet. 7 or 8 . . . . 1. C. INTEGERRIMA.
Fl. stalked ; pet. 4 . . . . 2. C. CALYCINA.

1. **C. integerrima,** *DC. Prod.* iii. 33 (1828). **Dawata,** *S.*
C. zeylanica, Arn. Pug. 16. Thw. Enum. 120. C. P. 1963, 1964.
Fl. B. Ind. ii. 439. Wight, Ill. t. 90 (*C. zeylanica*). Bedd. Fl. Sylv. t. 193.

A rather large tree with erect trunk and wide-spreading head, bark rather smooth, grey, young parts glabrous ; l. on very short petioles, 3½–4½ in., obovate-oval, tapering to base, rounded or very bluntly acuminate at apex, entire or obscurely serrulate at top, margin somewhat revolute, glabrous and somewhat shining on both sides, very dark dull green above, pale and with obscure glandular dots beneath, rather thick, veins inconspicuous, stip. large, ¾ in., interpetiolar, enclosing terminal bud, caducous; fl. small, sessile, few, in small heads, on stout branches of axillary trichotomous cymes much shorter than l.; cal. glabrous, segm. 7 or 8, lanceolate, acute; pet. small, 7 or 8, clawed, roundish, coarsely undulate-dentate at margin ; stam. twice as many as pet., scarcely longer than cal.; style stout; fruit small, about ¼ in., berry-like, smooth, red ; seed with thick orange testa, lobulate.

Moist low country ; rather common. Fl. Feb.; creamy-white.
Also in India, Burma, Malaya, China, and Trop. Australia.
Heart-wood very hard, pale orange-coloured, tough, shining, with conspicuous medullary rays, not durable. A gum exudes from the fl.-buds and glues the fl. together in the heads. This tree very obviously shows its relationship to the mangroves by the large tufts of aërial roots it sends forth from the trunk and branches: these are admirably seen in many of the old wild trees in Victoria Park, Colombo.
The leaves show on their under surface a line or fold at some distance on either side of the midrib precisely similar to those in *Erythroxylon Coca* and due to the same cause, the mode of packing in the bud.

2. **C. calycina,** *Benth. in Journ. Linn. Soc.* iii. 75 (1859). **Ubériya,** *S.* [PLATE XXXVI.]
Thw. Enum. 121. C. P. 3458, 2588.
Fl. B. Ind. ii. 439.

A large tree, with thin rough grey bark, l. on very short petioles, 3–3½ in., broadly oval, tapering at base, shortly acuminate and twisted at apex, entire, glabrous, stiff, bright green, gland-dotted beneath, lat. veins numerous, parallel, conspicuous; fl. few, nearly ½ in., on stout ped., in scanty erect dichotomous axillary cymes half as long as l., bracts rounded mucronate, caducous; cal. glabrous, segm. 4, acute, as long as tube, pet. 4, clawed, incised-fimbriate; stam. 8; fruit about ½ in., pyriform, crowned with erect connivent cal.-segm., red, glabrous.

Forests in the moist region; rare in the low country, and only recorded from the Singhe Rajah Forest; common in the lower montane zone and even extending above 5000 ft. Fl. Jan.–April; white.

Endemic.

The montane form has the leaves more coriaceous, smaller, $\frac{1}{2}$ in., and proportionately broader; but does not deserve to be made a variety.

Wood red, rather heavy, hard but liable to split, medullary rays extremely wide, giving a very characteristic appearance. This beautiful wood is often called 'Dawata' by the carpenters.

5. **WEIHEA,** *Spreng.*

A large shrub, l. opp., with interpetiolar stip., fl. axillary; cal. free, cut nearly to the base into 5 segm.; pet. 5, *hypogynous*, much cut; stam. about 30, *hypogynous;* ov. quite *superior*, 3-celled with 2 pendulous ovules in each cell, style long, persistent, stigma 3-lobed; fruit a fleshy capsule, 3-celled, ultimately dehiscent septicidally; seeds 4–6, with a small aril, embryo straight in axis of endosperm.—Sp. 5; 1 in *Fl. B. Ind.*

The structure of the flower is completely thalamifloral, hence Gardner and others have referred it to *Tiliaceæ* (*Elæocarpeæ*) and Moon to *Elæocarpus* itself (see also Arnott in Ann. Nat. Hist. iii. 23) which its pet. so much resemble.

W. zeylanica, *Baill. Adans.* iii. 38 (1862). **Kannu,** *T.* **Pana,** *S.*
Elæocarpus integrifolius, Moon Cat. 42 (non Lam.). *Anstrutheria* zeylanica*, Gardn. in Calc. Journ. Nat. Hist. vi. 344. Thw. Enum. 121. C. P. 1116.

Fl. B. Ind. ii. 441. Calc. Journ. Nat. Hist. vi. t. 4. Bedd. Fl. Sylv. t. 194.

A large shrub, very much branched from the base, young parts glabrous; l. $1\frac{3}{4}$–3 in. (or more) on short erect curved petioles, broadly oval, rounded at base, obtusely acuminate, entire, glabrous, shining above, bright apple green, rather paler beneath, stip. interpetiolar, small, lanceolate, acute, ciliate; fl. $\frac{3}{4}$ in., on short curved ped., solitary or rarely 2 or 3 in axils, buds small, globular, completely enclosed for a long period before expansion in 2 thick, cup-shaped, rounded, ciliate bracts; cal.-segm. oblong-lanceolate, acute, densely silky outside, persistent, ultimately deflexed; pet. with a long claw, very deeply cut into linear segm., soon falling; fruit nearly globose, tipped with long style, at length dehiscent by 3 valves.

Low country, principally in the dry districts, where it is common;

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* In honour of Philip Anstruther, Colonial Secretary of Ceylon from 1846 to 1850, a gentleman much interested in Agriculture, Horticulture, and Botany.

rarer in the moist region, *e.g.* Kalutara; Galle; Kandy. Fl. July-September; white.

Also in Southern India.

Specimens of this are in Wight's Herb. labelled 'Ceylon, 1796, Klein,' but there are none in Rottler's collection at Kew.

A very remarkable plant; the stip. are like those of *Rubiaceæ*.

6. **ANISOPHYLLEA,** *Br.*

Tree, l. alt., dimorphic, without stip., fl. small, in supra-axillary racemes; cal.-tube adnate to ov., segm. 4; pet. 4, laciniate; stam. 8, epigynous; ov. inferior, 4-celled, with a solitary pendulous ovule in each cell; fruit coriaceous, indehiscent, 1-seeded; seed without endosperm, embryo large, without cotyledons.—Sp. 5; 4 in *Fl. B. Ind.*

A very singular plant; the embryo, as remarked by Thwaites, is precisely like that of *Barringtonia* and *Careya*, along with which genera he places it.

A. zeylanica, *Benth. in Niger Flora*, 575 (1849). **Wéli-penna, Wéli-piyana,** *S.*

Tetracrypta cinnamomoides, Gardn. and Champ. in Kew Journ. Bot. i. 314, and v. 378.

Thw. Enum. 119. C. P. 2205.

Fl. B. Ind. ii. 442. Kew Journ. Bot. v. t. 5. Bedd. Fl. Sylv. t. 195.

A moderate-sized tree, with dark brown bark, branches horizontal or drooping, young twigs pubescent; l. of two kinds, normal large and persistent ones, and very small usually deciduous ones on the younger branches, normal l. on a very short, broad, flattened petiole, 4–5 in., ovate-oblong, rounded or tapering to unequal base, caudate-acuminate, obtuse or subacute, entire, glabrous, strongly 5-nerved from base with the nerves very prominent beneath, dark green, paler beneath, the smaller l. alternating with the normal ones, sessile, $\frac{1}{4}$–$\frac{3}{8}$ in., lanceolate, acute, green, stipuliform; fl. small, on short slender pilose ped., arranged in 2 or 3 very short racemes, superposed and supra-axillary; cal.-tube pubescent, deeply 8-furrowed, segm. triangular; pet. cuneate, deeply cut into 5 linear laciniæ; fruit about 1 in., fusiform, crowned with persistent cal.-segm., deeply 8-furrowed, leathery, glabrous.

Moist low country, up to 3000 ft., rather common. Moon's specimens are from Kalutara.

Fl. April–October; greenish-white.

Endemic.

When young the branches are whorled, and spread horizontally. The larger leaves have much resemblance to Cinnamon, but are often very unequal-sided. Wood greyish-yellow, rather hard, with very conspicuous medullary rays and pores, the former connected by transverse bars of soft tissue.

LI.—COMBRETACEÆ.

TREES or shrubs, sometimes semi-scandent, l. alt. or opp., simple, without stip.; fl. small, regular, bisexual or polygamous or unisexual; cal.-tube adnate to ov. and prolonged above it, segm. 4–7 (2 in *Gyrocarpus*), pet. 4 or 5, or more usually 0; stam. 8 or 10 (4 in *Gyrocarpus*), alternating with 4 staminodes), inserted on cal.-limb; ov. inferior, 1-celled, with 2–5 (1 in *Gyrocarpus*) pendulous ovules; fruit indehiscent, dry, fleshy or drupe-like; seed solitary, cotyledons large, plaited or convolute, no endosperm.

Anth. opening by slits	
Pet. 0.	
Fl. in spikes, ...	1. TERMINALIA.
Fl. in globular heads	2. ANOGEISSUS.
Pet. 4 or 5.	
L. alternate	3. LUMNITZERA.
L. opposite	4. COMBRETUM.
Anth. opening by recurved valves (*Gyrocarpeæ*) .	5. GYROCARPUS.

Eleven species, none extending into the montane zone. *Anogeissus* and *Gyrocarpus* are dry-country trees, *Terminalia belerica* and *T. parviflora* confined to the moist region, and *Lumnitzera* an inhabitant of mangrove swamps.

1. **TERMINALIA**, *L.*

Trees, l. alt. or opp., without stip., fl. polygamous, sessile, in axillary or terminal paniculate spikes; cal.-tube adnate to ov., limb free, campanulate, cut into 4 or 5 triangular segm.; pet. 0; stam. 8 or 10, 5 often longer, inserted on cal.-tube outside an annular epigynous hairy disk; ov. inferior, 1-celled, with 2 or 3 pendulous ovules; fruit an indehiscent drupe, flesh hard or fibrous, stone woody or bony; seed solitary, without endosperm.—Sp. 80; 12 in *Fl. B. Ind.*

Drupe not angled or winged	
Stone of drupe very obscurely angled	
L. glabrous, drupe pubescent .	1. T. BELERICA.
L. pubescent, drupe glabrous .	2. T. CHEBULA.
Stone of drupe 5-rayed. . . .	3. T. PARVIFLORA.
Drupe with 5 broad wings (*Pentaptera*) .	4. T. GLABRA.

1. **T. belerica,*** *Roxb. Pl. Cor.* ii. 54 (1798). **Bulu,** *S.* **Tanti,** *T.*
Myrobalanus bellerica, Gaertn. Fruct. ii. 90. Moon Cat. 73. Thw. Enum. 103. C. P. 1605.
Fl. B. Ind. ii. 445. Wight, Ill. t. 91. Bedd. Fl. Sylv. t. 19.

A large tree, with straight, often buttressed trunk, and long horizontal branches, bark vertically furrowed, brown, young parts glabrous; l. alternate, closely placed at ends of branchlets, 4–6 in., obovate-oval, tapering to base, rounded or very shortly acuminate at apex, entire, with a pellucid margin, glabrous and shining on both sides, paler beneath, stiff, venation finely reticulate, pellucid, main veins prominent beneath, petiole $1\frac{1}{2}$–2 in., cylindrical; fl. small, the male shortly pedicellate, the bisexual nearly sessile, numerous in axillary spikes or racemes shorter than l., often crowded at ends of branchlets without l. so as to form a terminal panicle; peduncles pubescent, bracts minute, caducous; cal. tomentose outside, the limb with long crisp hair within; drupe $1\frac{1}{4}$–$1\frac{1}{2}$ in., ovoid, often somewhat pyriform, narrowed at base, irregular on surface, but not at all angled, covered with a fine, close, brownish-yellow tomentum, stone large, woody, very obscurely angled, with a large seed-cavity.

Low country, moist and intermediate regions, not common. Kurunegala (Gardner). Often planted. Fl. February; pale greenish-yellow, strongly scented.

Also in India and Malaya.

The Ceylon tree is the variety *laurinoides*, Miq. usually, but it varies considerably in the form of the leaves. It never possesses the two glands at the top of the petiole figured and described by Roxburgh.

The fruits are the 'Beleric Myrobalans' of the old pharmacists, and are much used in native medicine. Wood greyish-yellow, hard but not durable, moderately heavy.

T. Catappa, L., the *Kottamba* of the Singhalese and the 'country almond' of the English, is largely planted throughout the low country. It is native to Malaya, but is grown in most Tropical countries. Hermann does not seem to have noticed it in Ceylon.

2. **T. chebula,*** *Retz. Obs. Bot.* v. 31 (1789). **Aralu,** *S.* **Kadukkay,** *T.*
Moon Cat. 73. Thw. Enum. 103. C. P. 1604.
Fl. B. Ind. ii. 246. Bedd. Fl. Sylv. t. 27.

A moderate-sized tree, trunk crooked, with many spreading branches, bark very thick, grey-brown, young parts pubescent; l. alt., 3–5 in., broadly oblong-oval, rounded or cordate at base, very obtuse at apex, pubescent on both sides especially

* The names *belerica* and *chebula* are Latinisations of the Arabic names for these two kinds of myrobalans by which they were first known in Europe.

when young, thick and rigid; petiole ½–¾ in., pubescent, with 2 prominent glands at the top just beneath l.; fl. as in the last, but spikes all terminal, bracts linear, hairy, conspicuous in bud; cal.-limb glabrous outside, with long hair within; drupe pendulous, about 1½ in., broadly ovoid, glabrous, not at all angled, yellowish-green, stone oblong, bony, very thick, obscurely angled, seed cavity very small.

Low country up to 2500 ft., principally in the dry districts, rather rare, but locally abundant. Jaffna (Gardner); Watagoda (Thwaites); Panwila; Uva Province, frequent; abundant about Nilgala, where it is gregarious. Fl. April; greenish-white.

Also in India, Burma, and Malaya.

The fruits are called 'Ink-nuts' or 'Gall-nuts' by the English, and are collected for sale to the Moormen by the country people. In Uva the collection is leased, and the sale in 1892 fetched R. 7500. They are the 'Chebulic Myrobalans' of the old pharmacists, and are here a valued medicine, both when young and in a mature condition. The flesh is very rich in tannin. When dried they show five blunt obscure angles. Wood heavy, very hard, dark brown with a purplish tinge, close-grained, durable.

3. **T. parviflora,** *Thw. Enum.* 103 (1859). **Hanpalanda,** *S.*
T. zeylanica, Van Heurck and Mull.-Arg. Obs. Bot. 220. C. P. 618.
Fl. B. Ind. ii. 446 (var. of *T. Chebula*).

A moderate-sized tree, with smooth, thin, pale brown bark, young shoots quite glabrous; l. numerous, alt. or sub-opposite, 3½–4½ in., ovate-oval, rounded or narrowed and often unequal at base, tapering to acuminate obtuse apex, entire but somewhat undulate, perfectly glabrous on both sides, rather thin, venation pellucid, petiole ⅜–⅝ long, flat above, without glands; fl. sessile, very small, spikes in terminal and axillary panicles, very finely pilose, about equalling l., bracts minute, linear, pubescent; cal. pubescent outside, disk covered with long hair, segm. 4 (rarely 5), triangular, acute; stam. 8 (rarely 10); drupe 1–1¼ in. by ⅝ wide, oblong-ovoid, blunt, cylindrical, not at all ribbed, smooth, pale olive green with white dots, stone bony, with 5 deep wide grooves, and with 5 sharp angles. so as to be star-shaped in section.

Moist region in forests up to 4000 ft., rather rare. Ramboda (Gardner); Ambagamuwa; Hantane; Heneratgoda; Karuwita Korale.

Fl. April–June; pale sulphur yellow.

Endemic.

Clarke, in Fl. B. Ind., places this as a variety under *T. chebula;* he cannot have examined adequate specimens.

Heart-wood orange-brown, moderately heavy, close-grained, smooth.

4. **T. glabra,** *W. & A. Prod.* 314 (1834). **Kumbuk,** *S.* **Marutu,** *T.*
T. alata, Moon Cat. 73. Thw. Enum. 104. C. P. 1603.
Fl. B. Ind. ii. 447 (*T. Arjuna*). Bedd. Fl. Sylv. t. 28 (*T. Arjuna*) not good.

A very large tree with an extremely thick trunk and horizontally spreading branches, bark very thick, smooth, pinkish- or greenish-white, flaking off in large flat pieces, young twigs finely pubescent; l. opp. or sub-opposite, 3–6 in., oblong or oval-oblong, rounded at both ends, obscurely apiculate, very shallowly serrate-crenate in upper part, glabrous but not shining on both sides, pale dull green, veins pellucid, petiole very short, $\frac{1}{4}$–$\frac{3}{8}$ in., with 2 (or 1) prominent glands at top immediately beneath l.; fl. sessile, spikes rather lax, short, axillary or in small terminal panicles; cal.-limb nearly glabrous on both sides, disk with a few long white hairs; drupe 1$\frac{1}{2}$–2 in., obovate-ovoid, somewhat narrowed at base, bluntly pointed, glabrous, fibrous-woody, with 5 stiff hard projecting wings becoming wider upwards, and striated with very numerous much-curved veins, dark brown.

Banks of streams and rivers in the low country; very common in the dry region; rare in the moist districts. Fl. April, May; greenish-white, strongly honey-scented.

Also in India.

The name *T. Arjuna*, Bedd., seems a quite unnecessary synonym.

Grows to an enormous size in the beds of tanks and rivers in the dry region, and is, generally speaking, the most noticeable feature of such scenery. Cordiner recorded specimens at Yala, north of Hambantota, in 1800 (which is the earliest notice I find of it for Ceylon), with trunks 23$\frac{1}{2}$ ft. in circumference at 5 ft. from the ground. A well-known one at Colombo measured, in 1879, 45 ft. in circumference round the base, and 24$\frac{1}{2}$ ft. at 8 ft. above ground.

The astringent bark is used in medicine. It is remarkable for the immense amount of lime it contains, and it is largely burnt as a source of lime for chewing with betel, the copious ash almost entirely consisting of pure calcium carbonate.

Wood greyish-brown, with bands of darker colour, very hard and heavy, smooth, strong.

[*T. tomentosa*, W. and A., is recorded for Ceylon in Fl. B. Ind. The specimen is in Herb. Kew., labelled by Gardner as from 'Jaffna, Dyke.' It was, doubtless, planted there by Mr. Dyke. The species is very doubtfully distinct from *T. glabra.*]

2. **ANOGEISSUS,** *Wall.*

Tree, l. alt. or sub-opp., no stip., fl. small in globular heads; cal. with a long solid tube or neck extending above ov. and persistent, limb campanulate with 5 segm.; pet. 0; stam. 10, inserted on cal.-limb in 2 rows; ov. inferior, compressed, 1-celled, with 2 pendulous ovules; fruit small, indehiscent, winged, capped by a beak formed of the persistent neck of cal.; seed solitary, cotyledons convolute.—Sp. 5; 4 in. *Fl. B. Ind.*

A. latifolia, *Wall. Cat. n.* 4014 (1828). **Dawu,** *S.* **Vekkali,** *T.*
Conocarpus latifolia, Roxb., Thw. Enum. 103. C. P. 1220.
Fl. B. Ind. ii. 450. Wight, Ic. t. 994. Bedd. Fl. Sylv. t. 15.

A small tree, trunk erect, bark very smooth, whitish-grey, young parts glabrous; l. alt. or sub-opp., 2–3 in., broadly oblong-oval or sub-rotundate, rounded or subcordate at base, obtuse, often apiculate at apex, entire, more or less undulate, quite glabrous, pale dull glaucous green, pink when young, often conduplicate, venation pellucid, midrib prominent beneath, pink, petiole very short, channelled above; fl. sessile in small dense heads on slender slighly pubescent peduncles scarcely longer than petioles; cal. glabrous, segm. short, broad; fruit very small, crowded, in a small globular head, plane-convex, with a rather broad wing along the edges, and beaked with the long persistent upper part of cal.-tube, brown.

Open grass-lands in the dry country; rare, but locally abundant. Haragama; Bintenne; Nilgala, gregarious. Fl. Jan., Feb.; pale greenish-yellow.

Also in Peninsular India.

Heart-wood extremely hard and tough, but small.

3. LUMNITZERA, *Willd.*

Large shrub, l. alt., fleshy, without stip., fl. small, in axillary spikes; cal.-tube produced much beyond ov., with 2 adnate bracteoles near the base, limb with 5 shallow segm.; pet. 5, small; stam. 10; ov. inferior, 1–celled, with 2–5 pendulous ovules; fruit indehiscent, capped with the persistent cal.-tube and limb; seed 1, cotyledons convolute.—Sp. 2, both in *Fl. B. Ind.*

L. racemosa, *Willd. in Neue Schrift. Berl.* iv. (1803). **Bériya,** *S.*
Thw. Enum. 103. C. P. 1594.
Fl. B. Ind. ii. 452. Rheede, Hort. Mal. vi. t. 37.

A shrub or small tree, with smooth purplish bark, young parts quite glabrous, buds pointed; l. sessile, 2–3 in., readily disarticulating, spathulate-oblong, much tapering to base, rounded at apex, more or less shallowly crenate in upper part or entire, quite glabrous, shining, fleshy, veins not visible except midrib; fl. small, sessile, laxly arranged in short spikes from the l.-axils; cal.-tube fusiform, quite glabrous, segm. shallow, obtuse, finely ciliate; pet. oblong, acute; fruit $\frac{1}{2}$–$\frac{3}{4}$ in., oblong-ovoid, compressed, capped by persistent cal., glabrous, hard-fleshy, longitudinally striate when dry.

Mangrove swamps round the coast; rather common. Colombo; Chilaw; Puttalam; Kalpitiya; Panadure; Kalutara; Jaffna. Fl. Feb.; white.

Shores of the Eastern Tropics generally.

This forms part of the vegetation of tidal swamps, and is reckoned as a mangrove. Turns black in drying. Wood pale reddish-grey, smooth and shining, rather heavy, very strong and durable, but of small size.

4. COMBRETUM, *L.*

Semi-scandent or straggling shrubs, l. opp., entire, fl. polygamous, in axillary spikes or racemes; cal.-tube constricted above ov. and more or less produced beyond it, limb campanulate cup-shaped or funnel-shaped, segm. 4; pet. 4, very small; stam. 8, inserted with pet. on cal.-limb; ov. inferior, narrow and stalk-like, 1-celled, with 2–5 pendulous ovules; fruit dry or fleshy, indehiscent, with 4 prominent wings; seed solitary, cotyledons large, plaited.—Sp. 120; 18 in *Fl. B. Ind.*

Fruit with thick fleshy wings . . . . . . 1. C. ACUMINATUM.
Fruit with thin papery wings
  Cal.-limb cup-shaped . . . . 2. C. OVALIFOLIUM.
  Cal.-limb long funnel-shaped . . . . . 3. C. EXTENSUM.

1. **C. acuminatum,** *Roxb. Hort. Beng.* 28 (1814).
C. sarcopterum, Thw. Enum. 415. C. P. 3715.
Fl. B. Ind. ii. 455.

A low straggling bush, with long branches, not climbing, young shoots with rough scaly ferruginous pubescence; l. 5–7 in., oval or ovate-oval, rounded at base, more or less acuminate, sub-obtuse, undulate, glabrous, densely covered beneath with minute prominent glands, venation prominent beneath, petiole very short, $\frac{1}{4}$–$\frac{1}{3}$ in.; fl. on very short ped., racemes spike-like, usually solitary, shorter than l.; cal. glabrous, minutely glandular, limb campanulate; pet. minute, spathulate; stam. twice or thrice as long as cal.; fruit nearly 2 in., ovoid-oblong, narrowed at both ends, fleshy, minutely glandular, brown, wings thick and blunt.

Moist low country; rare. Colombo (Ferguson); Horana, Reigam Korale; Hiniduma; Kalutara; Heneratgoda. Fl. August–October; yellow.

Also in Assam, Burma, Malaya, and the Philippines.

2. **C. ovalifolium,** *Roxb. Hort. Beng.* 28 (1814). **Kaduruketiya-wel,** *S.*
C. Wightianum, Thw. Enum. 103 (in part). *C. Thwaitesianum,* Van Heurck and Mull. Arg. Obs. Bot. 238. C. P. 1601.
Fl. B. Ind. ii. 458. Hook. Bot. Miscell. iii. t. supp. 22 (*C. Heyneanum*).

A large straggling or climbing shrub, with numerous divaricate branches thickened at the nodes, bark smooth yellowish-grey, young parts glabrous; l. opposite, 3–4½ in., oval, acute at base, acuminate, obtuse, glabrous on both sides, petiole ½–1 in. long; fl. numerous on very short glabrous ped., in short, rather dense, pedunculate racemes (often paniculate) axillary from l. of previous year and 3–6 (occasionally reaching 8) in. long, buds globose, apiculate, bracts minute; cal.-tube glabrous outside, constricted into a short neck above ov., then suddenly expanded into a cup-shaped limb, hairy within, segm. triangular, acute, reflexed; pet. about as long as cal.-segm., oblong; fruit 1–1¼ in., pale shining golden-brown, wings very large, ½ in. in widest part, papery, stiff, glabrous, finely transversely striate.

Dry country; rather common. Tiripane; Kekirawa; Haragama; Kurunegala. Fl. July, August; white.
Also in the Indian Peninsula.

3. **C. extensum,** *Roxb. Hort. Beng.* 28 (1814).
C. Wightianum, Wall., Thw. Enum. 103 (part). *C. platyphyllum*, Van Heurck and Mull. Arg. Obs. Bot. 242. C. P. 1602.
Fl. B. Ind. ii. 458. Wight, Ic. t. 227 (*C. Wightianum*).

A straggling semi-scandent shrub with the habit and l. of the last; but petioles shorter, under ½ in.; fl. rather larger but similarly arranged, buds ovoid, sharp-pointed; cal.-tube much longer, contracted above ov. and then at once expanding into a long funnel-shaped limb hairy within, segm. narrowly triangular, acuminate, very acute, reflexed; pet. oblong, truncate; fruit (not seen) much as in *C. ovalifolium*.

Low country to 3000 ft.; rather rare. On Dambulla Hill, trailing over bare rock; Hantane (Gardner). Fl. May; yellowish white.
Also in India and Malaya.
Thwaites combined 2 and 3, but they are, though much alike, readily distinguished by the calyx.

5. GYROCARPUS, *Jacq.*

A tree, l. alt., clustered at ends of branches, no stip., fl. very small, unisexual and monœcious or polygamous, in large bractless cymes; male fl.:—cal. with 4–7 irregular segm., pet. 0, stam. usually 4, alternating with 4 small fleshy staminodes, anth. opening upwards by 2 valves; fem. or bisexual fl.:—cal.-tube adnate to ov., segm. 2, persistent and greatly enlarged in fruit, pet. 0, ov. inferior, 1-celled with a single pendulous ovule, style short, stigma capitate; fruit drupe-like, crowned

with the long wing-like persistent cal.-segm., stone bony; seed with large convolute cotyledons.

Placed by Thwaites at end of *Lauraceæ*, to which its stamens are so remarkably similar. The fruit is constantly mistaken for that of a Dipterocarp.

G. Jacquini, *Roxb. Cor. Pl.* I., i. (1795). **Hima,** *S.* **Tanakku,** *T.*

G. asiaticus, Willd., Moon Cat. 73; Thw. Enum. 258. C. P. 2202.
Fl. B. Ind. ii. 461 (not given for Ceylon). Bedd. Fl. Sylv. t. 196.

A moderate-sized or large tree, with an erect trunk and rather small spreading head, bark smooth, shining, greenish-white, young branches stout, marked with leaf-scars, young parts densely pubescent; l. alt. rather crowded, spreading, 4–6 in. and nearly as wide, very broadly ovoid or somewhat rhomboid, tapering to base, acuminate, acute, glabrous above, densely soft-pubescent with stellate hair beneath, strongly 3-veined from base, petiole very long, 2–5 in., slender; fl. small, the male very numerous, the female few, all on slender ped. arranged in globular clusters in large much-branched cymes on long pubescent peduncles, several of which arise from the ends of the twigs above the new l.; cal. densely hairy-pubescent; fruit (without the wings) about $\frac{5}{8}$ in., ovate-ovoid, furrowed in upper part, wrinkled below, pubescent, wings $2\frac{1}{2}$–$3\frac{1}{4}$ in. long, linear-spathulate, obtuse, thinly leathery, striate, pubescent, greyish-brown, stone ovoid, bony, furrowed.

Dry and intermediate country; rather common. Moon's locality is Kattregam. Fl. Feb., March, April; cream-coloured.

Throughout the Tropics, *G. americanus*, Jacq., not being distinguishable.

The tree is quite bare of leaves for a short time. Wood very light, soft, greyish white; much used in the north of the island for catamarans (rafts) and the outriggers of boats. Lac is found on this in the Uva country.

LII.—MYRTACEÆ.

TREES or shrubs, l. opp. or alt., simple, without or with very minute stip., fl. regular, bisexual; cal.-tube adnate to ov. and rarely produced beyond it, segm. 4 or 5 (rarely 2 or 3), usually persistent in fruit; pet. 4 or 5 (very rarely more), distinct, or slightly connate at base or united into a deciduous cap; stam indef., epigynous, distinct or connate below; ov. inferior, 2–4-celled, with many ovules in each cell, style simple; fruit

indehiscent, berry-like, pulpy or hard, with 1, few, or numerous seeds; seed without endosperm, embryo with small cotyledons, or quite without them (macropodous).

L. opposite; stam. distinct.
  Ovary 3-celled; l. 3-nerved . . . . . . 1. RHODOMYRTUS.
  Ovary 2-celled; l. with an intramarginal vein . 2. EUGENIA.
L. alternate; stam. connate below (*Barringtonieæ*).
  Seed solitary . . . . 3. BARRINGTONIA.
  Seeds numerous . . . . 4. CAREYA.

Our species are mainly inhabitants of the moist region and the hills. *Rhodomyrtus* and 15 species of *Eugenia* are confined to the montane region, and 22 species of *Eugenia* and 3 of *Barringtonia* to the moist low country, *Careya* extends up from the one into the other. Only 4 species of *Eugenia* are found in the dry region, 1 only, *E. bracteata*, being confined to it, as is also *Barringtonia acutangula*.

Eucalyptus. A considerable number of species of this large Australian genus have been introduced into the hill-country and much planted on estates for fuel and shelter. The species most frequently met with are *E. Globulus* (Blue Gum), *E. diversicolor* (Karri), *E. Leucoxylon* (Iron Bark), *E. robusta* (Swamp Mahogany), *E. marginata* (Jarrah); but there are many others.

1. RHODOMYRTUS, *DC.*

Large shrub, l. opp. 3-nerved, fl. axillary; cal.-tube turbinate, adnate to ov., and not produced beyond it, segm. 5, persistent; pet. 5, spreading, stam. indef., distinct; ov. inferior, 3-celled, with numerous ovules in each cell superposed in a double row, style simple, stigma capitate; fruit a berry, 3-celled, with numerous horizontal seeds; seed compressed, embryo curved with a long radicle and small cotyledons, no endosperm.—Sp. 5: 1 in *Fl. B. Ind.*

R. tomentosa, *Wight, Spicil. Neilgh.* i. 60 (1846).
Myrtus tomentosa, Ait., Moon Cat. 39; Thw. Enum. 114. C.P. 1591.
Fl. B. Ind. ii. 469. Wight, l. c. t. 71.

A large shrub or small, very much-branched tree, bark yellowish, vertically fissured, exfoliating, young branches finely tomentose; l. 2–2½ in., oval or oblong-oval, acute at base, obtuse or acute at apex, glabrous (when mature) above, densely covered with fine grey or yellowish tomentum beneath, stiff (very rigid when old), strongly 3-nerved (besides the marginal one), margin slightly recurved, petiole $\frac{1}{4}$–$\frac{3}{8}$ in.; fl. on stout pubescent ped., about 1 in. diam., solitary or 3 in a peduncled cyme, with 2 small linear bracts beneath each; cal. densely tomentose, segm. rotundate, spreading; pet.

broadly obovate, tomentose on the back, spreading or reflexed; fruit nearly globular, capped with cal.-segm., tomentose, soft, 3-celled, with a double row of seeds in each cell; seed triangular-reniform.

Upper montane zone; common. Fl. April–July; pet. white, tinged outside with purplish-pink, fil. flesh-coloured, darker at base.

Also in S. India, Malaya, and China.

The fruit is edible and pleasant. I have heard it called 'wild guava' by the English at Nuwara Eliya; in the Nilgiris it goes by the name of 'Hill Gooseberry.' Moon gives the S. name 'Sudu-kotala;' his locality is Uva.

At Malacca I found this abundantly on the sandy seashore, but in Ceylon it is entirely a montane plant.

Psidium Guyava, L. The Guava must have very quickly become naturalised here. There are specimens in Hermann's Herbarium, and he expressly states (Mus. 3) that it was brought by the Portuguese. There is no true Singhalese name, 'Péra,' the name usually employed, being Portuguese for Pear. *P. pumilum*, Vahl, Symb. ii. 56, is based on Ceylon specimens collected by Koenig. The Guava is native in Mexico, and perhaps other parts of Trop. America, but has now all the look of a wild plant in Ceylon.

2. **EUGENIA,*** *L.*

Trees or shrubs, l. opp., entire, with a more or less conspicuous marginal vein, usually gland-dotted, without stip., fl. in terminal or axillary paniculate cymes or solitary in axils of l. or scales below the l., often on suppressed branchlets, thus appearing to be fasciculate or racemose; cal.-tube from cup-shaped to tubular, adnate to ov. and sometimes produced beyond it, segm. 4 (rarely 5); pet. 4 (rarely 5 or more), either distinct and spreading or connate into a cap (calyptrate) which falls off on expansion of fl.; stam. indef., usually quite distinct, in many rows, anth. small, versatile; ov. inferior, 2-celled with several ovules in each cell, style simple; fruit usually a juicy berry, rarely dry, globular or ovoid, crowned with persistent cal.-limb or segm.; seeds 1 or very few, embryo with thick often connate cotyledons, no endosperm.—Sp. about 700; 131 in *Fl. B. Ind.*

Our largest genus (except *Cyperus*), forming a main constituent of the forest of the moist and montane regions, to which the brilliant pink, orange or crimson tints of the young foliage are a great ornament. No less than 29 of our species are endemic.

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* Given by Micheli in 1728, in honour of the illustrious Prince Eugene of Savoy, to the plant now called *E. Michelii*, Lam.

Though the species are not difficult to recognise, the differences are hard to describe in few words, and the following clavis needs checking by the fuller descriptions.

Fl. in cymes.
- Pet. large, distinct; cal. with large staminal disk; fruit over $\frac{3}{4}$ in. (*Jambosa*).
  - Cal.-tube funnel-shaped or turbinate.
    - Lat. veins of l. few, distant . . . 1. E. AQUEA.
    - Lat. veins of l. numerous, close . . 2. E. GRANDIS.
  - Cal.-tube hemispherical . . . . 3. E. HEMISPHÆRICA.
  - Cal.-tube cylindric, long . . . . 4. E. CYLINDRICA.
- Pet. small, usually combined and falling off as a cap (calyptrate) (exc. 12, 13, and 22); no staminal disk; fruit under $\frac{3}{4}$ in. (*Syzygium*).
  - Cymes terminal or in axils of present l.
    - Cal.-tube long, funnel-shaped.
      - Fruit globose, white . . . . 5. E. SPICATA.
      - Fruit ovoid-turbinate, tapering to base 6. E. LANCEOLATA.
      - Fruit ovoid-urceolate, crowned with long cal.-limb . . . . . 7. E. FERGUSONI.
    - Cal.-tube short, cup-shaped or turbinate.
      - L. oval or lanceolate.
        - Branchlets quadrangular.
          - L. over 2 in., acuminate . . 8. E. LISSOPHYLLA.
          - L. under 2 in., rounded . . 9. E. SUBAVENIS.
        - Branchlets cylindrical, often compressed.
          - L. petiolate.
            - Cal. truncate.
              - Tree, l. oval . . . . 10. E. GARDNERI.
              - Bush, l. obovate-oval . . 11. E. CORYMBOSA.
            - Cal.-segm. obvious.
              - Pet usually distinct.
                - L. not revolute, fl. on ped. 12. E. MICRANTHA.
                - L. revolute, fl. sessile. . 13. E. REVOLUTA.
              - Pet. calyptrate.
                - Fl. small, $\frac{1}{4}$ in. diam. . 14. E. SYLVESTRIS.
                - Fl. large, $\frac{1}{2}$ in. diam. . . 15. E. ASSIMILIS.
          - L. sessile.
            - L. very broadly oval . . 16. E. CORDIFOLIA.
            - L. lanceolate-oblong . . 17. E. NEESIANA.
      - L. rotundate.
        - L. over 2 in., branchlets cylindrical 18. E. CYCLOPHYLLA.
        - L. under 1 in., branchlets quadrangular.
          - L. petiolate . . . . . 19. E. ROTUNDIFOLIA.
          - L. sessile . . . . . 20. E. SCLEROPHYLLA.
      - L. obovate (see also 11); fl. few, sessile, capitate . . . . 21. E. OLIGANTHA.
      - L. spathulate; fl. in cymes, pedicellate . . . . . . 22. E. OLIVIFOLIA.
  - Cymes in axils of fallen leaves.
    - Lat. veins few . . . . 23. E. OPERCULATA.
    - Lat. veins very numerous . . 24. E. JAMBOLANA.

Fl. solitary or in fascicles; pet. distinct (see also 21 and 22).
- Young parts pubescent (very minutely so in 33).
  - Fl. pedunculate.
    - Fl. over 1 in. diam.
      - L. rotundate, revolute . . . 25. E. LUCIDA.
      - L. oblong-ovate, cordate . . 26. E. HÆCKELIANA.
    - Fl. under 1 in. diam.
      - L. oval or lanceolate, over 2 in.
        - Fruit over $\frac{1}{3}$ in. diam.
          - Peduncles short; l. over 3 in.
            - Fruit over $\frac{3}{4}$ in. . . 27. E. TERPNOPHYLLA.
            - Fruit $\frac{1}{2}$ in., orange-yellow . 28. E. XANTHOCARPA.
          - Peduncles long; l. under 3 in. 29. E. BRACTEATA.
        - Fruit $\frac{1}{4}$ in. diam. . . . 30. E. RUFOFULVA.
      - L. linear-lanceolate, under 1 in. . 31. E. PHILLYRÆOIDES.
  - Fl. sessile or nearly so.
    - Fl. about 1 in. diam.
      - L. lanceolate-oblong . . . 32. E. FLOCCIFERA.
      - L. oval or ovate-oval . . . 33. E. RIVULORUM.
    - Fl. under $\frac{3}{4}$ in. diam.
      - L. under 5 in. . . . . 34. E. FULVA.
      - L. over 6 in. . . . . . 35. E. INSIGNIS.
- Young parts glabrous or nearly so.
  - Fl. sessile.
    - L. 4–5 in. . . . . . . 36. E. DECORA.
    - L. 1–3 in. . . . . . . 37. E. ROTUNDATA
  - Fl. pedunculate.
    - Peduncles under $\frac{1}{2}$ in.
      - L. nearly sessile, oval-spathulate . 38. E. MABÆOIDES.
      - L. distinctly petiolate, rotundate . 39. E. APRICA.
    - Peduncles over $\frac{1}{2}$ in.
      - L. sessile . . . . . . 40. E. AMŒNA.
      - L. petiolate.
        - L. under 3 in.
          - Peduncles over $\frac{1}{2}$ in. . . 41. E. PEDUNCULATA.
          - Peduncles under $\frac{1}{2}$ in. . . 42. E. MOONIANA.
        - L. over 3 in. . . . . 43. E. THWAITESII.

1. **E. aquea,** *Burm. Fl. Ind.* 114 (1768). **Wal-jambu,** *S.*
Herm. Mus. 67. Burm. Thes. 125. *E. sylvestris*, Moon Cat. 38 (non Wight). *Jambosa aquea*, DC., Thw. Enum. 115. C. P. 418.
Fl. B. Ind. ii. 473. Wight, Ic. tt. 216, 550.

A small or middle-sized tree with smooth grey bark, much branched, twigs slightly quadrangular, glabrous; l. very shortly stalked or nearly sessile, variable, 2–8 in., oval or oblong-oval, usually rounded or subcordate at base, obtuse or rounded at apex, coriaceous, shining, glands minute, black, lat. veins distant, rather prominent beneath; cymes 3–10-flowered, on short, stout, quadrangular peduncles, terminal and from upper axils, ped. shorter than cal.-tube; cal.-tube tubular-funnel-shaped, somewhat variable in length and

breadth, segm. large, usually broader than long, with membranous margins, spreading; pet. large, roundish, spreading; fruit $\frac{3}{4}$–1 in., globose, crowned with prolonged neck-like cal.-limb and segm.

Moist region, especially between 2000 and 5000 ft.; common; often planted. Fl. March–May; white or purplish rose-coloured.

Also in East Bengal and Burma.

At the higher elevations this puts on a very different appearance, with smaller (1$\frac{1}{2}$–3 in.) more oblong and more coriaceous leaves; but it is connected with the type by intermediate forms.

There is a cultivated spreading tree, very handsome in May when covered with its copious brilliant deep rose-coloured flowers, which must, I suppose, be referred to this species. But I have not seen it wild, and its origin is doubtful. It bears a large urceolate pale-green fruit crowned with the spreading cal.-segm.

E. malaccensis, L., the Malay apple, is cultivated under several varieties, as is also *E. Jambos*, L., the Jambu or rose-apple. Both are Malayan species, early introduced here, and both noticed by Hermann. The former, with large rose-red flowers and red pear-shaped fruits, is well figured in Wight, Ill. t. 98; the latter, with white flowers and narrow leaves, in Wight, Ic. t. 435. These fruits are pleasantly subacid and refreshing.

2. **E. grandis,** *Wight, Ill.* ii. 17 (1850).
Syzygium firmum, Thw. Enum. 417 (*S. montanum*, Thw. Enum. 116). C. P. 2964.
Fl. B. Ind. ii. 476. Wight, Ic. t. 614.

A large tree, bark smooth, whitish, shoots glabrous, l. large, 4–8 in., obovate-oval, tapering to base, rounded often retuse or very abruptly acuminate at apex, margin revolute, very coriaceous, thick and shining, lat. veins numerous, close, parallel, petiole about $\frac{1}{2}$ in., very stout; cymes terminal and axillary, large, about as long as l., fl. almost sessile, in 3s; cal.-tube nearly $\frac{1}{2}$ in., turbinate, attenuate below, segm. rounded, 2 larger than others; pet. rounded; fruit not seen, 'globose or somewhat pyriform, 1–1$\frac{1}{4}$ in., crowned with the large cup-like cal.-limb.'

Montane zone at about 4000 ft.; very rare. Ambagamuwa District. Fl. Sept.; white.

Also in Burma, Malay Pen., and Borneo.

Our plant differs slightly from this common Malayan species in its longer and laxer panicles, with fewer and larger fl., and its more obovate leaves.

3. **E. hemispherica,** *Wight, Ill.* ii. 14 (1850).
Strongylocalyx hemisphericus, Bl., Thw. Enum. 116. C. P. 2450, 3438, 2540.
Fl. B. Ind. ii. 477. Wight, Ic. t. 525. Bedd. Fl. Sylv. t. 203.

A medium-sized tree, with smooth, yellowish-grey bark, young twigs sub-tetragonal; l. 3$\frac{1}{2}$–5 in., lanceolate, tapering

to base, caudate-acuminate, subacute, stiff, smooth and shining, petiole about $\frac{1}{2}$ in., slender; cymes terminal and axillary, shorter than l., fl. large, $1\frac{1}{4}$ in., ped. long, articulated below fl., buds large, broad; cal.-tube short, $\frac{1}{4}$–$\frac{3}{8}$ in., hemispherical, segm. large, rounded, white, with membranous margins, spreading; pet. large, rounded, very concave, reflexed; fruit globose, $\frac{3}{4}$–1 in., green, crowned with cal.-segm.

Moist region up to 6000 ft., chiefly in the lower montane zone; rather rare. Deltota; Ambagamuwa; Kukul Korale; between Haputale and Galagama, abundant. Fl. Feb.–May; cream-coloured, sweet-scented.

Also in Southern India.

An ornamental plant when in flower. The fruit resembles a small apple. C. P. 2540 is a form from Elk Plains (over 6000 ft.), with l. only $1\frac{1}{2}$–$2\frac{1}{2}$ in. long, and small fl.

4. **E. cylindrica,** *Wight, Ill.* ii. 14 (1850).
Jambosa cylindrica, Thw. Enum. 115. C. P. 601.
Fl. B. Ind. ii. 479. Wight, Ic. t. 527. Bedd. Fl. Sylv. t. 201.

A medium-sized tree, with smooth, yellowish-grey bark, twigs cylindrical; l. $3\frac{1}{2}$–$5\frac{1}{2}$ in., narrowly lanceolate, tapering to base, caudate-acuminate, subacute, pale beneath with prominent venation, lat. veins very few, uniting with the marginal vein at a considerable distance from the edge, petiole $\frac{1}{4}$ in., stout; cymes terminal and from upper axils, shorter than l., peduncles long, slender, compressed-quadrangular, ped. divaricate, slender; cal.-tube $\frac{1}{2}$–$\frac{3}{4}$ in., slender, cylindrical, tapering to base, slightly narrowed at summit, limb expanded cup-shaped, segm. roundish-triangular, subacute; pet. large, concave; fruit about $\frac{3}{4}$ in., nearly globose, crowned by the short neck-like cal.-tube and reflexed segm.

Moist low country to 3000 ft.; rather rare. Ambagamuwa District; Hantane; Kalawane; Kukul Korale. Fl. Feb., March; pinkish-white.

Endemic.

A beautiful species, easily distinguished when in flower by the long slender, white calyx-tube; the buds look like large white cloves. When not in flower the peculiar venation of the leaves is characteristic.

5. **E. spicata,** *Lam. Encycl. Meth.* iii. 201 (1789). **Maran, Maranda,** *S.* **Marungi,** *T.*
Herm. Mus. 9. Burm. Thes. 166. Fl. Zeyl. n. 182. *Myrtus zeylanica,* L. Sp. Pl. 472; Moon Cat. 39. *E. zeylanica,* Wight, Ill. ii. 15. *Acmena zeylanica,* Thw. Enum. 118. C. P. 56, 380.
Fl. B. Ind. ii. 485 (*E. zeylanica*). Wight, Ic. t. 73. Bedd. Fl. Sylv. t. 202.

A large shrub or tree, with smooth or furrowed pale brown bark, and slender, shining, purplish twigs; l. variable, $1\frac{1}{2}$–$4\frac{1}{2}$ in., from ovate-oval to lanceolate-linear, usually caudate-acuminate, obtuse, margin slightly revolute, smooth

and shining on both sides, lat. veins numerous but inconspicuous, petiole about ¼ in.; cymes axillary and terminal, shorter than l., fl. small, numerous, rather crowded, ped. very short, glandular; cal.-tube under ¼ in., funnel-shaped, densely glandular, segm. rotundate, obtuse or subacute, erect; pet. imperfectly calyptrate; fruit globose or nearly so, a little under ¼ in., pure white.

Dry and intermediate country up to 2000 ft. or higher; very common. Fl. March and April; white.

Also in S. India and Malaya.

The pure white berries are ornamental and conspicuous. The leaves are very fragrant; they vary much; the narrow-leaved form is the commonest in the dry districts. C. P. 380, from Palagama, has small thick leaves and larger flowers.

Wood brown, heavy, liable to split.

6. **E. lanceolata,** *Lam. Encycl. Meth.* iii. 200 (1789).

Wight, Ill. ii. 15. *Acmena lanceolata,* Thw. Enum. 119. C. P. 2863.

Fl. B. Ind. ii. 285 (*E. Wightiana*). Wight, Ic. tt. 529 (*E. Wightiana*) and 530.

A rather small tree with grey bark and slender cylindrical twigs; l. 3½–5 in., broadly or narrowly lanceolate, tapering below, acuminate-caudate, acute, glabrous, lat. veins very fine, numerous, faintly marked, midrib impressed above, petiole ¼ in. or less; cymes short, usually few-fld., axillary often from axils of fallen l., fl. nearly sessile, articulated; cal.-tube ⅜–⅝ in., tubular-funnel-shaped, tapering below, segm. 4 or 5, very shallow, rounded; pet. numerous, sometimes as many as 12, but usually calyptrate; style long, persistent; fruit about ¾ in., erect, ovoid-turbinate, tapering to long base, capped with spreading cal.-segm. and long erect style, vertically striate.

Low country to 2000 ft. in the moist and intermediate regions, especially by streams; rather rare. Near Matara; Pasdun Korale; Singhe Rajah Forest; Ambagamuwa; Kurunegala. Fl. March; white.

Also in South India.

I think there are two plants confounded here, as I have collected in the Pasdun Korale specimens with thicker, broader, nearly sessile leaves, with more marked venation and with a shorter calyx; but I cannot fit our plants to *E. lanceolata* and *E. Wightiana* as separate species.

7. **E. Fergusoni,** *Trim.*

A bush or small much-branched tree, bark reddish-grey, twigs stout, quadrangular, thickened at the nodes, orange-coloured, leaf-scars prominent; l. 1½–3 in., crowded, very nearly sessile, ovate-oval, acute or obtuse at apex, rounded or subcordate at base, margin generally slightly curved, thinly coriaceous, stiff, lat. veins numerous, faintly marked beneath; fl. large,

sessile, cymes strictly terminal, with very short branches, so as to be corymbose or umbellate; cal. (when in fl.) very long, $\frac{3}{4}$–$1\frac{1}{4}$ in., tubular-funnel-shaped, gradually tapering to slender stalk-like base, mouth $\frac{3}{8}$ in. diam., almost truncate, with shallow rounded segm.; pet. calyptrate (or sometimes expanding), large, reddish outside; fruit broadly ovoid, about $\frac{3}{4}$ in., somewhat urceolate, crowned with rather long cal.-limb.

Var. β **minor,** *Trim.* *Syzygium calophyllifolium*, Thw. Enum. 118 (non *E. calophyllifolia*, Wight). C. P. 160.

L. much smaller, not exceeding 1 in., very shortly stalked, fruit about $\frac{1}{2}$ in., nearly globular, purple.

Upper montane zone; in open sunny places. The type only in the North-eastern mountain block, Wattekelle (Ferguson), Knuckles Hills and Rangala Ridge. Var. β, Adam's Peak (Gardner and Thwaites). Fl. April; pinkish-white.

Endemic.

Var. β seems to differ altogether from *E. calophyllifolia* (to which it is still referred in Fl. B. Ind.) in its leaf-venation as well as its remarkably long calyx. The C. P. specimens are in fruit only, and I have not seen the flowers.

8. **E. lissophylla,** *Duth. in Fl. B. Ind.* ii. 488 (1878). **Maha-kuretiya,** *S.*

Syzygium lissophyllum, Thw. Enum. 117. C. P. 2452.
Fl. B. Ind. ii. 488.

A moderate-sized tree, with thin, rather smooth pale-brown bark, young twigs quadrangular; l. 2–3 in., oval, tapering to base, caudate-acuminate, obtuse, glabrous and shining above, paler beneath, lat. veins very fine and numerous; fl. sessile or nearly so, in 3s at ends of quadrangular branches of terminal, and axillary cymes generally exceeding l.; cal. shortly campanulate, segm. short, rounded; pet. calyptrate; fruit globose (not seen ripe).

Forests in the lower montane zone; rather common. Fl. April, May; pinkish-white.

Also in the hills of Southern India.

Wood rather heavy, hard, yellow.

9. **E. subavenis,** *Duth. in Fl. B. Ind.* ii. 489 (1878).

Syzygium umbrosum, Thw. Enum. 118 (non Berg). C. P. 2539.
Fl. B. Ind. ii. 489.

A moderate-sized much-branched tree with brownish-grey bark, young twigs quadrangular, smooth, purple; l. small, $1\frac{1}{4}$–$1\frac{3}{4}$ in., broadly obovate-oval or oval, tapering to base, obtuse or rounded and often emarginate at apex, usually revolute at margin, thick, lat. veins numerous, fine, inconspicuous, fl. as in *E. lissophylla;* fruit $\frac{3}{8}$ in. diam., nearly globose.

Forests of the montane zone, 4000 to 6000 ft.; rather common. Fl. April; white, calyx crimson.

Endemic.

The up-country carpenters call the wood of this tree 'Weli-damba,' or 'Hin-damba.' It is softer and more open than that of most species.

10. **E. Gardneri,** *Duth. in Fl. B. Ind.* ii. 489 (1878). **Dambu,*** *S.* **Nir-naval,** *T.*

Syzygium Gardneri, Thw. Enum. 117. C. P. 2946.

Fl. B. Ind. ii. 489.

A moderate-sized or large tree, with smooth pale-grey bark, much branched, young twigs cylindrical, often somewhat compressed; l. 3–3½ in., oval or broadly oval, acute at base, caudate-acuminate, obtuse, smooth and shining, rather thin, bright apple-green, lat. veins very numerous, fine, conspicuous, pellucid, petiole ⅜–½ in.; fl. small, numerous, sessile, cymes copious, axillary and terminal, shorter than l.; cal. campanulate, truncate with obscure segm.; fruit ⅜–½ in., nearly globular and without any crown of cal.-segm.

Moist region between 2000 and 4000 ft.; common. Fl. July-Sept.; white.

Also in Southern India.

Wood rather hard and heavy, smooth, greyish-yellow.

11. **E. corymbosa,** *Lam. Encycl. Meth.* iii. 199 (1789). **Dan̥, Hin-dan̥,** *S.*

Herm. Mus. 3, 14. Burm. Thes. 57. Fl. Zeyl. n. 183. *Myrtus caryophyllata*, L. Sp. Pl. 472. *Calyptranthes caryophyllata*, Pers., Moon Cat. 38. *Syzygium caryophyllæum*, Gaertn. Fruct. i. 166; Thw. Enum. 117. C. P. 1583.

Fl. B. Ind. ii. 490 (*E. caryophyllæa*). Wight, Ic. t. 540 (*Id.*).

A bush or shrubby tree, with smooth grey bark, young twigs slightly compressed, scurfy, orange-brown; l. 2½–3½ in., obovate-oval, acute at base, rounded, obtuse or very shortly and bluntly acuminate, glabrous, shining and bright apple-green above, rather pale beneath, lat. veins numerous, fine but rather conspicuous beneath, petiole ¼ in.; fl. small, numerous, nearly sessile, cymes terminal, corymbose, trichotomous, buds ovoid-globose; cal. campanulate, truncate, segm. scarcely perceptible; pet. calyptrate; fruit about ⅜ in., depressed-globose, inky-purple or nearly black, shining, juicy.

Low country in both moist and dry regions; very common, especially in open sandy places. Fl. Feb.–May; white.

Also in Southern India and Borneo.

The small black fruit is edible.

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* The name Dambu or Damba is applied to many other species of *Eugenia*.

12. **E. micrantha,** *Duth. in Fl. B. Ind.* ii. 483 (1878).
Syzygium micranthum, Thw. Enum. 117. C. P. 1580.
Fl. B. Ind. ii. 483.

A moderate-sized tree with smooth, greyish-brown bark, branchlets slender, cylindrical; l. crowded, 2–3 in. or rather more, broadly oval, abruptly narrowed to base, conspicuously caudate-acuminate, obtuse at apex, margin often revolute, quite glabrous, lat. veins numerous, rather close, straight, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., slender; fl. very small, on short ped., cymes numerous, axillary, shorter than l.; cal.-tube short, broadly turbinate, segm. distant, very short, acute; pet. very small; fruit very small, under $\frac{1}{4}$ in., globose, capped by cal.-segm., pale purple.

Forests in lower montane zone; common. Fl. Feb., March, and October; greenish-white.

Endemic.

13. **E. revoluta,** *Wight, Ill.* ii. 17 (1850).
Syzygium revolutum, Thw. Enum. 117. C. P. 2521.
Fl. B. Ind. ii. 492. Wight, Ic. t. 534.

A moderate-sized tree with pale brown, finely cracked bark, twigs somewhat compressed; l. 1$\frac{1}{2}$–4 in., more or less obovate-oval, tapering to base, obtuse, rounded, often emarginate at apex, more or less revolute at margin, thick, stiffly coriaceous, shining above, usually glaucous beneath, lat. veins prominent especially beneath, petiole very short; fl. sessile in clusters of 3 or more, cymes numerous, pedunculate, axillary and terminal, shorter than l., sometimes from the old wood, cal.-segm. short, pet. usually distinct, small; fruit about $\frac{1}{2}$ in., globose, fleshy, dark purplish-red.

Forests of the montane zone up to 7000 ft.; common. Fl. Feb., March, and September; pinkish-white.

Also in the Nilgiris.

At the higher elevations this has smaller leaves, 1–1$\frac{1}{2}$ in. long only.

The wood-cutters at Nuwara Eliya call this 'Karon-damba,' the wood is very hard and strong, but liable to split.

14. **E. sylvestris,** *Wight, Ill.* ii. 15 (1850) non Moon. **Alubo,** *S.*
Calyptranthes Jambolana, Moon Cat. 39. *Syzygium sylvestre*, Thw. Enum. 116. C. P. 2862.
Fl. B. Ind. ii. 493. Wight, Ic. t. 532.

A large tree with smooth yellowish-grey bark, twigs cylindrical; l. 3$\frac{1}{2}$–5 in., oblong-oval, tapering to base, shortly acuminate, obtuse and generally twisted at apex, margin slightly recurved, coriaceous, lat. veins numerous, fine, rather prominent, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., fl. sessile, small, in dense clusters, cymes nearly all terminal, on long peduncles, crowded; pet. calyptrate; fruit about $\frac{1}{2}$ in., globose, purplish-black.

Moist and intermediate low country to 3000 ft.; rather common. Fl. April–June; white.

Endemic.

Wight gave Moon's name *sylvestris* to this in error; Moon's plant is *E. aquea*, as Wight's description 'copied from Moon's notes' shows; but Wight's figure represents the present species, and there is thus no need to alter the accepted nomenclature.

Wood reddish-grey, smooth, durable.

15. **E. assimilis,** *Duth. in Fl. B. Ind.* ii. 493 (1878).
Syzygium assimile, Thw. Enum. 116. C. P. 46, 2449.
Fl. B. Ind. ii. 493.

A moderate-sized tree, twigs stout, sometimes subquadrangular; l. variable, $1\frac{1}{2}$–5 in., oval or broadly oval or obovate-oval, tapering to base, more or less acuminate, obtuse and often twisted at apex, margin often revolute, stiffly coriaceous, lat. veins numerous, rather conspicuous, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stout; fl. rather large, $\frac{1}{2}$ in., sessile, cymes on stout peduncles, crowded, mostly terminal; cal.-tube cup-shaped; pet. usually calyptrate; fruit $\frac{1}{2}$–$\frac{5}{8}$ in., globose, green, capped with large cal.-segm.

Moist region, from low country up to 6000 ft.; common. Fl. March, April; cream-coloured.

Endemic.

Distinguished from *E. sylvestris* by its much larger flowers and more prominent lateral leaf-veins.

Very variable in size and shape of leaf, and possibly more than one species are included under the name. C. P. 2449 (from Hunasgiriya) has almost rotund l., and in specimens from Dimbula they are narrowly oblong-lanceolate. This is the tree to which the name 'Damba' seems most usually applied by wood-cutters in the hill districts; the wood is much used.

16. **E. cordifolia,** *Wight, Ill.* ii. 16 (1850).
Herm. Mus. 24. Fl. Zeyl. n. 184. *Myrtus androsæmoides*, L. Sp. Pl. 472. *Calyptranthes cordifolia*, Moon Cat. 39. *Syzygium cordifolium*, Thw. Enum. 116. *E. androsæmoides*, Bedd. Fl. Sylv. Anal. Gen. 107. C. P. 350, 2622.
Fl. B. Ind. ii. 491. Wight, Ic. t. 544.

A moderate-sized tree, twigs very stout, cylindrical, glabrous; l. very large, 4–8 in., sessile, very broadly oval, cordate and somewhat amplexicaul at base, rounded or very shortly and bluntly acuminate at apex, often much revolute at margin, thick and leathery, shining above, midrib depressed above, very prominent beneath, lat. veins numerous, conspicuous; fl. nearly sessile, rather large, few, cymes terminal and axillary, usually much shorter than l.; cal.-tube shortly turbinate, much expanded at mouth, thick, segm. broadly triangular, obtuse; pet calyptrate; fruit large,

$\frac{5}{8}$ in., globular, crowned with the broad neck-like cal.-tube and spreading segm.

Moist region, extending from the low country up to 4000 ft. or more; rather rare. Kalutara (Moon); Colombo (Ferguson); Ambagamuwa; Adam's Peak; Ratnapura; Pasdun Korale. Fl. March-June; white. Endemic.

A very distinct species, certainly *Myrtus androsæmoides* of Linnæus. The plants from Pasdun Korale and (C. P. 2622) Adam's Peak have longer and more pointed leaves than the type, and smaller flowers.

Moon gives the native name 'Panu-kæra,' which really applies to *E. Neesiana*; Hermann gives no native name.

17. **E. Neesiana,** *Wight, Ill.* ii. 15 (1850). **Panukéra,** *S.*
Syzygium Neesianum, Arn. Pug. 17; Thw. Enum. 117. C. P. 735, 4013.
Fl. B. Ind. ii. 493. Wight, Ic. t. 533.

A very large tree, bark smooth, reddish-brown coming off in very thin flakes, branchlets terete; l. $2\frac{1}{2}$–4 in., nearly sessile, lanceolate-oblong, rounded or somewhat cordate at base, shortly acuminate, obtuse, glabrous and shining on both sides, lat. veins numerous parallel; fl. small, cymes terminal and axillary, small, lax, with divaricate angular branches, ped. $\frac{1}{2}$ as long as cal.; cal.-tube turbinate; pet. calyptrate; fruit about $\frac{1}{2}$ in., nearly globular.

Moist low country; common. Fl. March, April; white. Endemic.

Rather variable in width of l.; C. P. 4013 is a broader-leaved form with somewhat larger flowers. Wood useful.

18. **E. cyclophylla,** *Thw. in Fl. B. Ind.* ii. 494 (1878).
C. P. 3915.
Fl. B. Ind. ii. 494.

A small tree, bark flaking off in small pieces, twigs stout, cylindrical; l. 2–3 in., sub-sessile, rotundate, as broad as long, rounded at base and apex, margin usually very strongly revolute or cucullate (the end being also recurved), very thick, stiffly coriaceous, midrib very broad and prominent beneath, lat. veins coarse, conspicuous, marginal vein doubled, glands black, conspicuous; fl. sessile, in clusters, cymes terminal, shorter than l., peduncle very stout, quadrangular; fruit small, about $\frac{1}{4}$ in., globose, crowned with cal.-limb.

Upper montane zone; very rare. Only found on ascent to Adam's Peak from Maskeliya; first collected in 1866. Fl. March; white. Endemic.

19. **E. rotundifolia,** *Wight, Ill.* ii. 17 (1850).
Syzygium rotundifolium, Arn. Pug. 17; Thw. Enum. 118. C. P. 1587.
Fl. B. Ind. ii. 494.

A small tree or shrub, with smooth reddish-grey bark, much branched, twigs very numerous, quadrangular; l. numerous, persistent, closely placed, small, $\frac{1}{2}$–$\frac{3}{4}$ in., orbicular, often retuse at apex, stiff and coriaceous, shining above, paler and with the numerous lat. veins slightly prominent beneath, petiole under $\frac{1}{8}$ in., slender; fl. sessile, 2 or 3 together, cymes small, crowded, terminal, scarcely exceeding l.; fruit nearly $\frac{1}{2}$ in., nearly globose, dull reddish-purple.

Upper montane zone down to 6000 ft.; very common. Fl. April; pinkish-white.

Endemic.

Known readily from *E. sclerophylla* by its distinctly though shortly stalked leaves. This and the next, with their dense flat-topped heads of evergreen foliage, are very characteristic of our highest hill jungle.

20. **E. sclerophylla,** *Duth. in Fl. B. Ind.* ii. 494 (1878).
Syzygium sclerophyllum, Thw. Enum. 118. C. P. 274.
Fl. B. Ind. ii. 494.

A small or moderate-sized much-branched tree, twigs very numerous, quadrangular, with prominent leaf-scars; l. very numerous and very persistent, sessile, $\frac{5}{8}$–1 in., broadly oval or rotundate, rounded or very slightly cordate at base, rounded at apex, smooth and shining above, paler and with the numerous lat. veins prominent beneath; fl. sessile in threes, cymes terminal, slightly exceeding l., branches stout, quadrangular; fruit about $\frac{1}{4}$ in., ovoid-globular, crowned with cal.-limb.

Upper montane zone down to 6000 ft.; common. Fl. Feb.–April; white.

Endemic.

21. **E. oligantha,** *Duth. in Fl. B. Ind.* ii. 494 (1878).
Syzygium oliganthum, Thw. Enum. 118. C. P. 452.
Fl. B. Ind. ii. 494.

A bush or small much-branched tree, twigs very numerous, slender, quadrangular; l. $\frac{3}{4}$–1$\frac{1}{4}$ in., obovate, tapering to base, rounded and often emarginate at apex, shining above, conspicuously dotted beneath with the lat. veins scarcely visible, petiole $\frac{1}{8}$ in.; fl. few, very small, sessile in twos or threes on terminal or rarely axillary peduncles much shorter than l.; cal.-tube pyriform, segm. ovate, acute; fruit about $\frac{1}{4}$ in., globose, dark red.

Lower montane zone; rather rare. Ambagamuwa; Hantane; Maskeliya. Fl. March, April; white.

Endemic.

22. **E. olivifolia,** *Duth. in Fl. B. Ind.* ii. 495 (1878).
Syzygium spathulatum, Thw. Enum. 118 (non Berg). C. P. 2493.
Fl. B. Ind. ii. 495.

A small much-branched tree, twigs numerous, slender, quadrangular; l. 1–1¾ in., spathulate-oval or spathulate-lanceolate, much tapering at base, shortly acuminate, obtuse at apex, smooth and shining above, paler and somewhat glaucous beneath and with oblique rather conspicuous lat. veins, petiole ⅛ in. or more; fl. very small, on slender ped. as long as cal., in copious, erect, slender, lax, axillary and terminal cymes about as long as l.; cal.-limb cup-shaped, segm. shallow; pet. sometimes expanding; fruit ¼ in., globose, purplish-red.

Montane zone, rather common; at lower elevations, rare. Deltota; top of Nillowe Kande, Pasdun Korale. Fl. July–Sept.; pinkish-white.

Endemic.

23. **E. operculata,** *Roxb. Hort. Beng.* 37 (1813). **Bata-damba, Kobo-mal,** *S.*

Calyptranthes caryophyllifolia, Moon Cat. 39. *Syzygium nervosum*, DC., Thw. Enum. 417, 116. C. P. 2801.

Fl. B. Ind. ii. 498. Wight, Ic. t. 552.

A large tree with spreading branches, bark on trunk rather thick, grey and exfoliating, on branches smooth and nearly white, twigs cylindrical, slightly thickened at nodes, somewhat compressed; l. 4–6 in., oval or broadly lanceolate, tapering to base, shortly acuminate, obtuse, stiff, shining on both sides, bright green above, paler beneath, lat. veins few, curved, rather prominent, pellucid, petiole about ½ in.; fl. sessile in threes, cymes large, lax, pedunculate, spreading, 3–4 in. long, coming from axils of fallen l.; cal. ovoid-turbinate, becoming campanulate, smooth and shining, mouth truncate; pet. calyptrate, the cap pointed; fruit ⅜ in., nearly globular, purple, juicy.

Moist region up to 4000 ft.; common. Fl. Feb.–April; cream-coloured.

Also in Himalaya, Assam, Burma, S. China, Malay Islands.

Wood greyish-yellow, moderately heavy and hard, durable. The leaves when bruised have an agreeable aromatic odour. The fruit is not eaten in Ceylon.

24. **E. Jambolana,*** *Lam. Dict.* iii. 198 (1789). **Maha-dan, Ma-dan,** *S.* **Naval, Peru naval,** *T.*

Herm. Mus. 8. Burm. Thes. 197. Fl. Zeyl. n. 185. *Myrtus Cumini*, L. Sp. Pl. 471. *Calyptranthes Cumini*, Moon Cat. 39. *Syzygium Jambolanum*, DC. Thw. Enum. 417, 116. C. P. 3644.

Fl. B. Ind. ii. 499. Wight, Ic. t. 535. Bedd. Fl. Sylv. t. 197.

A large or very large tree, bark grey or nearly white, thick, rough, exfoliating, twigs cylindrical-compressed; l. 3–3½ in.,

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* *Jambolana*, the Portuguese name for the fruit, from *Jamun*, the Indian one.

oval or oblong-oval, tapering to base, acute or subacute at apex, glabrous, not shining, rather thin, light bright green, lat. veins very numerous, faintly marked, petiole $\frac{1}{4}$–$\frac{1}{2}$ in.; fl. small, on short ped., cymes about 3 in., lax, pedunculate, with slender divaricate branches, coming off from axils of fallen l., often at some distance down the branches; cal. shortly turbinate, limb cup-shaped, truncate or with very obscure segm.; pet. calyptrate, cap not pointed; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., usually ovoid, often lop-sided, crowned with truncate cal.-limb.

Var. β, **microcarpa,** *Thw. l. c.* Var. *caryophyllifolia*, Duth. in Fl. B. Ind. l. c. Wight, Ic. t. 553. C. P. 1584.

L. ovate-oval, acuminate, berries smaller, globose.

Low country, in both wet and especially in dry regions, attaining to 3000 ft. in former; var. β the commoner form. Fl. May–August; white, honey-scented.

Throughout the Tropics of Asia.

I do not think this is ever cultivated in Ceylon; but the fruit, which is generally no bigger than a large pea, is much eaten. We do not appear to have in Ceylon any of the large-fruited sorts found in India.

The leaves have a pleasant aromatic scent when bruised. Wood reddish-grey, not heavy, moderately hard, durable, much used, often called 'Méni-damba.'

Jambolifera pedunculata, Gaertn. Fruct. i. 178 (non Vahl) is a form of this with oblong fruit, also figured in Wight, Ic. t. 620 (*E. obtusifolia*, Roxb.). On the confusion by Linnæus and subsequent writers between this species and *Acronychia laurifolia* see under that plant (Pt. I. p. 216).

25. **E. lucida,** *Lam. Dict.* iii. 205 (1789). [PLATE XXXVII.]

E. hypoleuca, Thwaites in Bedd. For. Man. cxii. (name only). Trim. Syst. Cat. 33. C. P. 3865.

Fl. B. Ind. ii. 501.

A much-branched bush with rough silvery grey bark, twigs cylindrical, compressed, young parts hairy-pubescent; l. 1$\frac{1}{2}$–2$\frac{1}{2}$ in., rotundate or broadly oval, tapering at base, rounded at apex, usually very strongly revolute at margin, dark green and polished above, purple when young, yellow-white beneath, very stiff and coriaceous, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stout; fl. large, 1$\frac{1}{2}$ in., few, solitary, usually from the base of the young shoot below the l., peduncle $\frac{1}{2}$–1$\frac{1}{4}$ in., stiff, pubescent, with 2 small oblong bracts immediately beneath fl.; cal.-tube shallow, cup-shaped, pubescent outside, segm. very large, orbicular-ovate, finely ciliate, unequal, imbricate; pet. large, rounded, 1–1$\frac{1}{4}$ in.; stam. inserted on very broad disk; fruit over 1 in., globular, crowned with large erect cal.-segm., seeds 2 or 3, very large, brownish-white.

Montane zone, 4500–6000 ft., in open sunny places; rare. Only in the North-eastern mountain mass. Knuckles; Wattakelle; Kobonilla; Rangala Hills. Fl. April and September; white.

Also found in Mauritius and Bourbon, but nowhere in Asia.

The fruits are ripe at the same time as the flowers are expanded; they are precisely like small rosy-cheeked apples. The flowers are handsome, and the largest in the genus.

I follow the Fl. B. Ind. in referring this to *E. lucida*, but Lamarck describes his plant as having sessile flowers.

26. **E. Hæckeliana,*** *Trim. in Journ. Bot.* xxiii. 207 (1885).

A large bush or small tree, bark reddish, young shoots cylindrical compressed, floccose with fulvous tomentum; l. large, 4–6 in., oblong-ovate, more or less cordate at base, subacute at apex, margin somewhat undulate, when young densely clothed on both sides with yellow wool which wears off with age leaving adult l. quite glabrous above and slightly floccose near midrib beneath, lat. veins rather distant, prominent, petiole very short, stout; fl. large, $1\frac{1}{4}$ in., solitary, on short, stout fulvous-woolly ped. with two lanceolate acute bracts at summit, coming off from axils of two opposite bracts (scale-leaves) at base of shoots below the new l.; cal.-tube campanulate-turbinate, as long as ped., densely fulvous-hairy, segm. large, ovate, subacute, somewhat recurved; pet. rather longer than cal.-segm., oval; staminal disk large, square, densely hairy; fruit (not seen ripe) globose, crowned by erect cal.-segm.

Moist low country; very rare. Only found among rocks by the sea-shore at Wéligama in the extreme south of the island. Fl. Dec.; pinkish-white.

Endemic.

The leaves have a very strong midrib, which is usually somewhat curved, and the leaf is often stiffly conduplicate.

27. **E. terpnophylla,** *Thw. Enum.* 114 (1859).
C. P. 2623.
Fl. B. Ind. ii. 503. Bedd. Ic. t. 283.

A moderate-sized tree, branchlets slender, cylindrical, young parts with ferrugineous tomentum; l. 3–4 in., varying from narrowly lanceolate to broadly oval, acute at base, caudate-acuminate, obtuse at apex, glabrous, thin, lat. veins few, fine, conspicuous beneath, uniting at a considerable distance within the margin, petiole $\frac{1}{4}$–$\frac{3}{8}$ in.; fl. on very short rusty-pubescent ped., solitary or in small axillary clusters; cal.-tube turbinate, rusty-pubescent, segm. large, ovate-oblong, obtuse; pet. rather longer than cal.-segm., oblong, obtuse; fruit rather over $\frac{3}{4}$ in., globose, crowned with spreading cal.-segm., rusty-pubescent when young.

* Commemorates Prof. Ernst Haeckel of Jena, who spent six weeks at Wéligama shortly before I collected this plant there.

Moist low country; rare. Ratnapura and Reigam Korale (Thwaites); Ambagamuwa. Fl. Jan.-March; greenish-white.
Endemic.

28. **E. xanthocarpa,** *Thw. Enum.* 416 (1864).
C. P. 3834.
Fl. B. Ind. ii. 503.

A large bush or very small tree, with grey bark, twigs cylindrical, young parts with rusty-brown pubescence; l. 3–5 in., oblong-oval, acute at base, more or less acuminate, obtuse at apex, glabrous, light green above, pale greenish-white beneath, lat. veins numerous, rather conspicuous, uniting near the margin; fl. on short rusty-hairy ped., with two small linear bracts at the top, solitary or in small axillary cymes of three or five; cal.-tube campanulate, rusty-hairy, segm. large, oval, obtuse; pet. much longer than cal.-segm., obovate-oblong, obtuse; fruit $\frac{1}{2}$ in., depressed-globose, often somewhat lobed, crowned with erect cal.-segm., finely pilose, bright orange.

Moist low country; very rare. Only found near Bentota, on the S.W. coast. Fl. November–March; white.
Endemic.
The flowers have a singular creosote-like scent.

29. **E. bracteata,** *Roxb. Hort. Beng.* 37 (1813). **Tembiliya,** *S.* **Kaya, Venkalikaya,** *T.*
E. zeylanica, Roxb. (non Willd.), Moon Cat. 38; Arn. Pug. 18. *E. Willdenovii*, Wight, Thw. Enum. 114 (non DC.). C. P. 1586, 1590.
Fl. B. Ind. ii. 502. Hook. Journ. Bot. i. t. 124 (*E. Roxburghii*). Wight, Ic. t. 545 (*E. Willdenovii*).

A much-branched shrub or small tree, with very smooth yellowish-grey bark, young twigs cylindrical, densely covered with rusty pubescence; l. $1\frac{3}{4}$–3 in., oblong-lanceolate or oval, tapering to base, obtuse at apex, often somewhat acuminate, glabrous, paler beneath, veins inconspicuous, petiole $\frac{1}{8}$–$\frac{3}{8}$ in.; fl. usually solitary, often 2–7 in corymbose cymes, ped. rather long, stiff, rufous-pubescent, with two small linear bracts at summit; cal.-tube campanulate, rufous-pubescent, segm. oblong-ovate, obtuse; pet. large, ovate-oblong, pubescent outside, ciliate, somewhat reflexed; fruit $\frac{1}{3}$–$\frac{5}{8}$ in., usually globose, sometimes pear-shaped, crowned with cal.-segm., orange-yellow or red.

Dry region, especially near the coast; very common. Fl. Feb.–May; white.
Also in Southern India.
A showy species when in full blossom; variable in size of leaf and flower. I fail to find any means of clearly distinguishing, even as a variety, *E. Roxburghii*, DC. (*E. zeylanica* Roxb., *E. Willdenovii*, Wight).

By the original descriptions the flowers should be more numerous than in *E. bracteata*, but there is much confusion in later authors. Further critical examination is required.

A specimen from Colombo (Ferguson) has much longer leaves, and bears a note stating that it has globular red fruit 'quite different' from those of ordinary *E. bracteata*, but it is too incomplete for certain identification.

The foliage is very like that of a *Memecylon*, and the Tamils give it the same name as *M. umbellatum*, with which it often grows. The leaves are aromatic when bruised. Wood greyish-yellow, hard, close-grained.

30. **E. rufo-fulva,** *Thw. Enum.* 416 (1864).
C. P. 3835.
Fl. B. Ind. ii. 503.

A moderate-sized tree, bark pale brown or nearly white, young shoots cylindrical, slender, elongated, rufous-pubescent; l. $2\frac{1}{2}$–$4\frac{1}{2}$ in., lanceolate or linear-lanceolate, acute or tapering at base, very long caudate-acuminate, acute at apex, smooth and shining above, densely covered with very fine brownish-red tomentum beneath (becoming glabrous when old), petiole $\frac{1}{4}$–$\frac{3}{8}$ in., slender, curved; fl. small, ped. slender, $\frac{1}{4}$–$\frac{1}{2}$ in., pubescent, 1–3 in leaf-axils; cal.-segm. longer than tube, oblong, obtuse, tomentose outside; pet. oblong, obtuse, longer than cal.-segm.; fruit globular, under $\frac{1}{4}$ in., pubescent, crowned with spreading cal.-segm.

Moist low country; rare. Gattehatte, near Avisawella; Reigam Korale; Nillowe Kande. Fl. March–June.

Endemic.

Varies with very narrow leaves.

31. **E. phillyræoides,** *Trim. in Journ. Bot.* xxiii. 207 (1885).

A much-branched dense twiggy shrub, with roughish pale-brown bark, young parts with white hair; l. very small, barely 1 in., numerous, crowded, erect, linear-lanceolate, tapering to base, acuminate, obtuse, margin slightly revolute, dark green above, paler beneath, lat. veins inconspicuous, petiole short; fl. (not seen) solitary, axillary, peduncle shorter than l.; fruit $\frac{3}{8}$–$\frac{1}{4}$ in., depressed-globose, flat-topped, crowned by wide staminal disk, and large rather unequal spreading cal.-segm., glabrous when mature (pubescent when young), red.

Montane zone; very rare. Only found at summit of Kalupahane Kande, Lagalla, East Matale (about 5000 ft.). Not seen in flower.

Endemic.

Approaches *E. Rottleriana*, W. and A., figured (in flower only) in Wight, Ic. t. 100, of the hills of S. India, with which it requires careful comparison.

32. **E. floccifera,** *Thw. Enum.* 115 (1859).
C. P. 463.
Fl. B. Ind. ii. 504.

A small tree, with brown cracked bark, branchlets terete, densely covered with soft brown tomentum ; l. large, 4–7 in., lanceolate-oblong, acute at base, long-acuminate, acute at apex, densely brown-tomentose when young, becoming glabrous when old, lat. veins fine, not conspicuous, petiole $\frac{3}{8}$ in.; fl. rather large, nearly 1 in., on very short tomentose ped., solitary or in fascicles of 2–4, axillary; cal. densely fulvous-tomentose, segm. over $\frac{1}{4}$ in., linear-lanceolate, acute, reflexed ; pet. about as long, oval, obtuse ; fruit not seen.

Moist low country ; very rare. Reigam Korale (Thwaites). Fl. bluish-white.

Endemic.

33. **E. rivulorum,** *Thw. Enum.* 115 (1859).
C. P. 3440.
Fl. B. Ind. ii. 504.

A small tree, bark smooth, quite white, branchlets cylindrical, glabrous, young parts with a very minute purplish tomentum ; l. very large, 6–12 in., oval or ovate-oval, rounded at base, acuminate, bright green above, pale yellowish-green beneath, thick and leathery, veins strongly marked, indented on upper surface, prominent beneath, especially the intramarginal one, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., very thick ; fl. large, over 1 in., sessile, few in axillary fascicles, chiefly on old wood ; cal.-tube campanulate, faintly pilose, segm. broad, rotundate, spreading ; pet. nearly $\frac{1}{2}$ in., oblong ; fruit large, 1 in., irregularly globose, pericarp thick fleshy, dark brown, wrinkled.

Wet forests in the moist low country ; very rare. Singhe Rajah Forest ; Pelawatte Forest. Fl. March, April ; pet. pale violet-pink, stam. white.

Endemic.

The large flowers are often borne even at the very base of the old stems, close to the ground, giving the plant a singular appearance.

34. **E. fulva,** *Thw. Enum.* 115 (1859).
C. P. 3008.
Fl. B. Ind. ii. 504.

A small tree, young shoots cylindrical, compressed, clothed with fine orange tomentum ; l. 4–5 in., oval, acute or rounded at base, shortly acuminate, glabrous and shining above, finely yellow-tomentose, becoming glabrous beneath, lat. veins few, conspicuous, uniting much within the margin, petiole $\frac{1}{2}$ in., channelled ; fl. $\frac{5}{8}$ in. wide, sessile, solitary or 2 or 3 together in axils of present or fallen l. ; cal. fulvous-hairy, segm. ovate-triangular, acute ; fruit globose, fulvous-tomentose, crowned with enlarged cal.-segm.

Moist low country ; very rare. Hewesse ; Morowak Korale. Fl. Sept.–Dec. ; white.

Endemic.

35. **E. insignis,** *Thw. Enum.* 416 (1864).
C. P. 3677.
Fl. B. Ind. ii. 504.

A small tree, bark pale, twigs cylindrical, compressed, young parts covered with white tomentum, l. distant, large, 6–8 in., oblong-oval, rounded at base, suddenly acuminate, obtuse, glabrous on both sides, pale beneath, lat. veins few, distant, prominent beneath, uniting with the very strongly marked intramarginal vein at some distance from edge; fl. sessile, about $\frac{3}{4}$ in.; cal. densely covered with white hair, segm. broadly oval; pet. longer than cal.-segm., oblong-oval, ciliate; fruit over 1 in., nearly globular, densely covered with a felt of white hair, capped with cal.-segm.

Moist low country; very rare. Galpatta, Reigam Korale, is the source of the C. P. specimens, and I have seen no others. Fl. white.

Endemic.

The intramarginal veins are so strongly marked and so distant from the edge that the leaf looks almost 3-nerved.

36. **E. decora,** *Thw. Enum.* 115 (1859).
C. P. 3545.
Fl. B. Ind. ii. 504.

A small tree with smooth grey bark, twigs cylindrical, thickened at nodes, young parts glabrous; l. 4–5 in., oval, rounded at base, shortly acuminate, obtuse, glabrous on both sides, shining above, paler beneath, lat. veins not close, rather prominent, marginal veins double; fl. quite sessile, in small axillary clusters; cal.-segm. rounded, pilose; fruit depressed, broader than long, $\frac{3}{4}$ in. wide, 2-seeded.

Moist low country; very rare. Only found near Galle. Fl. Sept.; white.

Endemic.

This is somewhat obscure. I have seen only the C. P. specimens, which are perhaps of two different species, and quite insufficient. The above description applies to those which Thwaites seems to have intended by the name; the others have almost precisely similar leaves, but the fl. are smaller and on slender pedicels $\frac{1}{4}$–$\frac{1}{2}$ in. long. There is but a single separate fruit.

37. **E. rotundata,** *Trim.*
E. Mooniana, var. β, Thw. Enum. 114. *E. amœna*, Thw., var. *rotundata*, Trim. Syst. Cat. 33. C. P. 2803.

A much-branched bush with whitish bark, twigs numerous, cylindrical, glabrous; l. small, 1–2 (rarely 3) in., usually rotundate or very broadly oval, rarely narrowly oval, rounded at base, very obtusely acuminate, stiff and rigid, paler and copiously dotted beneath, veins inconspicuous, petiole very short,

thick; fl. small, sessile, in very small, axillary, and terminal fascicles, often on old wood; cal. slightly pilose, segm. rounded; pet. oval, much longer than cal.-segm., fruit $\frac{3}{8}$–$\frac{1}{2}$ in., globular, scarlet.

Rocky hills in the low country, especially in the intermediate region. Deltota; Uma-oya; Doluwe Kande; Lagalla; summit of Ritigala, abundant. Fl. May–September; pinkish-white.

Endemic.

This is combined with *E. amœna* in Fl. B. Ind., but it seems nearer *E. Mooniana*, under which Thwaites puts it.

38. **E. mabæoides,** *Wight, Ill.* ii. 13 (1850).
Thw. Enum. 114. C. P. 445, 1588.
Fl. B. Ind. ii. 505.

A shrub, very much branched, bark brownish-grey, twigs very numerous, cylindrical, compressed, young parts glabrous; l. $\frac{1}{2}$–$1\frac{1}{2}$ in., broadly or narrowly oval-spathulate, tapering to base, rounded at apex, very thick, stiff and rigid, dark green and shining above, paler beneath, petiole very short; fl. very small on usually short slender ped., solitary or in small axillary or terminal clusters; cal. very glandular, segm. rounded, finely ciliate; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., globular or somewhat ovoid, capped with small cal.-segm.

Montane zone, 4000–7000 ft.; rather common. Fl. Sept., Oct.; pale green.

Endemic.

There are specimens in Herb. Kew, from 'J. Watson, 1834' (Hb. Griffith n. 2362). The leaves are often very small and C. P. 1588 is this form, which is found at the higher elevations.

39. **E. aprica,** *Trim.*

A much-branched bush, twigs cylindrical compressed, young parts glabrous; l. 1–$2\frac{1}{4}$ in., rotundate or very broadly oval, suddenly and shortly tapering to base, rounded or very obtuse at apex, margin more or less revolute, rigid, pale beneath, and with rather prominent veins, petiole about $\frac{1}{4}$ in.; fl. small, $\frac{3}{8}$–$\frac{1}{2}$ in., on short ped., usually solitary from base of a contracted branchlet, and appearing extra-axillary; cal.-segm. obtuse; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., ovoid, capped with small cal.-segm., bright red.

Open places in the montane zone; very rare. Apparently confined to the N.E. mountain mass. Knuckles Mountains (Ferguson); summit of Rangala Ridge. Fl. April; white.

Endemic.

I regret making another species, especially as my specimens are somewhat insufficient; but I cannot fit them into any existing one.

40. **E. amœna,** *Thw. Enum.* 114 (1859).
C. P. 3439.
Fl. B. Ind. ii. 505 (in part).

A small tree, branchlets terete glabrous; l. large, 3½–6 in., quite sessile, ovate-oblong, cordate at base, tapering into long acuminate, obtuse apex, rather thick, veins inconspicuous; fl. about ¾ in., on very slender glabrous ped. about ¾ in. long, in clusters of 2–10 between the terminal pair of l., bracts beneath the fl. very small; cal. glabrous, segm. broadly oval, obtuse; pet. ovate, acute, scarcely twice length of cal.; fruit not seen.

Moist low country; very rare. Hapugodde, Kukul Korale; Rakwane; Dolosbagie up to 1500 ft. (Thwaites). Fl. April and September; white.
Endemic.
A singular species with the habit of *Saprosma indicum.*

41. **E. pedunculata,** *Trim. in Journ. Bot.* xxvii. 162 (1889).

A shrub, much branched, twigs cylindrical, young parts glabrous, l. 1½–2¼ in., broadly oval, shortly tapering to base, shortly and very obtusely acuminate, thick bright green, paler beneath, lat. veins rather numerous, more conspicuous above than beneath, petiole ⅛–¼ in.; fl. rather large, ¾ in. or a little more, few, solitary, on straight, slender, slightly pilose ped. ½–2½ in. long, coming off from base of young shoots below the l. (and at first appearing as if in clusters); cal.-tube ovoid-turbinate, pubescent, segm. ovoid, obtuse, finely ciliate, reflexed; pet. large, spreading or reflexed; fruit not seen.

Montane zone; very rare. As yet only found on summit of the Rangala Ridge at about 5000 ft. Fl. Sept.; white.
Endemic.

42. **E. Mooniana,** *Wight, Ill.* ii. 13 (1850), *non Gardn.** **Pini-baru,** *S.*
Thw. Enum. 114. C. P. 11, 365.
Fl. B. Ind. ii. 505. Wight, Ic. t. 551 (not good).

A shrub or small tree, twigs numerous, slender, cylindrical; glabrous; l. variable in size and shape ¾–2½ in., usually oval or rhomboid-oval, tapering to base, more or less acuminate, obtuse at apex, thin, green on both sides, veins fine, inconspicuous, petiole short, slender; fl. ⅜–½ in., on very slender ped. about ½ in. long, in fascicles from base of (often suppressed) branchlets (apparently axillary and terminal); cal.-tube fusiform, constricted at top, segm. lanceolate, acute or obtuse; pet. oval-oblong, obtuse, often reflexed; fruit ½–¾ in., usually ovoid, rarely globular, pendulous, scarlet or crimson.

Moist and intermediate country up to 4000 ft.; common. Fl. March and April, and September; white.
Also in Southern India.

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* Gardner's *E. Mooniana* is a Brazilian species 'dedicated to Mrs. Moon, of Rio Janeiro.'

Though collected by Moon, he did not name or include it in his Catalogue. C. P. 365 from Medamahanuwara has larger and thicker leaves, and sometimes nearly sessile flowers, and approaches *E. rotundata.*
Wood yellow, smooth, hard, durable. From a large-leaved var. called 'Géta-kaha,' S. (found at Haputale), the very hard and heavy black sticks universally carried by Tamil coolies are obtained. They call them *Karumbadikambu* and *Karutamurutukambu*, and the black colour is produced by burial in mud for some months.

E. Michelii, Lam. (*Myrtus brasiliana*, L., *E. zeylanica*, Willd. (non Roxb., nec Wight), *E. Willdenovii*, DC. (non Wight), is occasionally met with in gardens, and known as the 'Brazil cherry,' or 'Rata-jambu.' Linnæus's name, *E. uniflora*, which included both this and a form of *E. malaccensis*, should be abandoned (see Journ. Linn. Soc. xxiv. 142). This is the original species of *Eugenia;* it is a very ancient introduction to the East from the New World.

43. **E. Thwaitesii,** *Duth. in Fl. B. Ind.* ii. 506 (1879).
E. concinna, Thw. Enum. 416 (non Phil.). C. P. 2802.
Fl. B. Ind. ii. 506.

A tree with whitish bark, twigs cylindrical, young parts pilose; l. $3\frac{1}{2}$–5 in., ovate-oval, slightly narrowed at base, caudate-acuminate, obtuse at apex, glabrous on both sides when mature, lat. veins numerous, rather conspicuous, petiole under $\frac{1}{4}$ in., stout; fl. small, on slender ped. $\frac{3}{4}$–1 in. long, in apparent fascicles (really on suppressed branchlets), fruit about $\frac{3}{4}$ in., globular, crimson.

Moist country; very rare. Only from Ambagamuwa. Fl. Jan.
Endemic.

3. BARRINGTONIA,* *Forst.*

Trees, l. alt., stip. very minute, caducous, fl. in long racemes; cal.-tube adnate to ov., not produced beyond it, segm. 2–4; pet. 4 (or 5), imbricate, usually slightly connate at base and adnate to stam., stam. very numerous in several rows, epigynous, connate at base into a thick tube, fil. very long; ov. inferior, 2–4-celled, with several pendulous ovules in each cell, style long, simple; fruit fibrous or leathery, indehiscent, 1-celled; embryo without obvious cotyledons (macropodous) showing on transverse section central and peripheral portions, no endosperm.—Sp. 20; 10. in *Fl. B. Ind.*

Cal. quite closed in bud, splitting irregularly into 2 or 3 segm.
  L. entire . . . . 1. B. SPECIOSA.
  L. finely serrate.
    Fruit broadly ovoid . . . . 2. B. RACEMOSA.
    Fruit narrowly oblong . . . . . . 3. B. ZEYLANICA.
Cal. not closed in bud, segm. 4 . . . . . 4. B. ACUTANGULA.

* Commemorates the Hon. Daines Barrington, F.R.S. Died 1800.

1. **B. speciosa,** *Forst. Char. Gen. Plant.* 76 (1776). **Mudilla,** *S.* Moon Cat. pt. 2, 29. Thw. Enum. 119. *Agasta indica*, Miers in Trans. Linn. Soc., ser. 2, i. 61.

Fl. B. Ind. ii. 507. Wight, Ic. 547 (not good). Trans. Linn. Soc. l. c. t. 12 (*Agasta indica*).

A rather small or moderate-sized tree with a close round head, bark pale grey, branchlets very stout, marked with prominent leaf-scars, young parts glabrous; l. very large, 10–12 in., crowded, sessile, obovate, tapering to base, rounded at apex, entire, perfectly glabrous, polished and shining on both sides, midrib very stout and broad; fl. very large, about 7 in. diam., on very stout glabrous ped. 3–4 in. long, in a terminal erect raceme, buds nearly globular, apiculate; cal.-tube about ½ in., bluntly quadrangular, glabrous, limb veiny, splitting into 2 or 3 concave segm., pet. usually 4 (rarely 5), very slightly connate, about 2½ in., broadly oval, concave; staminal ring slightly adnate to base of pet., fil. 3–4 in., erect; ov. inferior, 4-celled, ovules 6–8 in each cell, style as long as stam.; fruit large, depressed, about 4 in. high, quadrangular, bluntly pointed, crowned with persistent cal.-lobes, angles usually acute, pericarp very thick, smooth and shining, pale brownish-yellow, texture light fibrous-spongy, with strong fibres round the seed; seed over 2 in., ovoid.

Seashores; very rare. On the south coast from Galle to Matara, possibly native; certainly planted elsewhere. Fl. May, creamy-white, odorous, filaments and style pink at top.

Also on the coasts of the Andamans, at Singapore, and generally in the Malay Archipelago and Polynesia to N. Queensland.

Thwaites gives C. P. 3610 for this, but in Hb. Perad. that number is *B. racemosa*, and there is no specimen of *B. speciosa*. A beautiful tree, much planted for ornament on the coast. If this were an old inhabitant here, it could scarcely have escaped notice by Hermann; as, however, it is one of those trees the seeds of which are carried by sea-currents, it may well have been brought to our southern shores by this natural agency. (See Tennent, 'Ceylon,' ii. 100.)

First collected in the Pacific Is., and Miers (l. c. t. 10) figures the original plant of which the fruit is broadly ovate-ovoid and very slightly quadrangular.

2. **B. racemosa,** *Bl. in DC. Prod.* iii. 288 (1828). **Diyamidella,** *S.*

Fl. Zeyl. n. 191. *Eugenia racemosa*, L. Sp. Pl. 471. *Stravadia rubra*, Moon Cat. 39. Thw. Enum. 119. *Butonica racemosa*, Juss., Miers, l. c. 66. C. P. 3610.

Fl. B. Ind. ii. 507 (not given for Ceylon). Wight, Ic. t. 152.

A small tree with long drooping branches, bark grey with prominent leaf-scars; l. large, crowded at ends of branches, sub-sessile, 6–12 in., obovate-oval, tapering to base, acute,

finely crenate-serrate, glabrous and shining on both sides, somewhat bullate between the strongly marked veins; fl. large, $2\frac{1}{2}$ in. diam., on stout minutely puberulous divaricate ped. $\frac{1}{4}$–$\frac{3}{8}$ in. long, laxly arranged in flexible pendulous racemes 1–2 ft. long, and terminal or from axils on the old wood, buds ovoid, bluntly pointed; cal.-tube turbinate, puberulous, limb splitting irregularly into 2 or 3 unequal segm., one of which often carries with it the top of the cal., leaving the others truncate; pet. connate at base, about 1 in., oval or oblong-oval, spreading; fil. rather over 1 in., erect, spreading; ovules 3 or 4 in each ov.-cell; fruit 2–$2\frac{1}{2}$ in. by $1\frac{3}{4}$ in. wide, ovoid or oblong-ovoid, crowned with persistent cal.-segm., circular on section or very bluntly 4-lobed, pericarp leathery, thick, brownish-crimson; seed $1\frac{3}{4}$ in.

Moist low country, especially near the coast, on the shores of back-waters, lakes, &c., but also inland; common. Conspicuous round Colombo Lake. Fl. nearly all the year; cream-coloured, fil. pink or crimson, very slightly scented.

Also on Malabar Coast and in Malaya and Polynesia.

There are two varieties of flower in this, one with the filaments pinkish-cream-coloured, the other with them crimson, the darker-flowered plant has also usually smaller leaves.

Hermann has a good figure (but no specimen), and from this Linnæus took his description.

3. **B. zeylanica,** *Gardn. in Fl. B. Ind.* ii. 508 (1879). **Goda-midella,** *S.*

B. racemosa, var. β, Thw. Enum. 119. *Butonica zeylanica*, Miers in Trans. Linn. Soc., ser. 2, i. 77. C. P. 2632.

Fl. B. Ind. ii. 508.

Bark grey, rough, marked with prominent leaf-scars; l. smaller than in *B. racemosa*, 4–7 in., sub-sessile, obovate-lanceolate, much tapering to base, acuminate, acute, finely serrate, glabrous, rather thin; fl. about $1\frac{1}{2}$ in. diam., ped. $\frac{1}{2}$–$\frac{3}{4}$ in., rather slender, divaricate, buds nearly globose; cal.-tube turbinate, limb irregularly splitting into 2–4 unequal segm.; fil. about $\frac{3}{4}$ in.; fruit about 3 in. by less than $\frac{3}{4}$ in. wide, narrowly oblong, tapering to base, crowned with cal.-segm., obtusely 4-angled; seed about $1\frac{1}{2}$ in. long.

Moist low country; rare. Galle, 1844 (Gardner); Ratnapura; Gilimalle. Fl. March.

Endemic.

I have never met with this in a living state, and only know it from the C. P. specimens from which the above description is taken; it seems a good species. It is probably *Stravadia integrifolia*, Moon Cat. 39, from Kalutara, but of that I have not seen authentic specimens.

The astringent bark is used in medicine.

4. **B. acutangula,** *Gaertn. Fruct.* ii. 97 (1791). **Ela-midella,** *S.* **Adampu,** *T.*

Fl. Zeyl. n. 190. *Eugenia acutangula,* L. Sp. Pl. 471. *Stravadium obtusangulum,* Bl. in Fl. des Serres, vii. (1851) 24. Thw. Enum. 119. C. P. 1592.

Fl. B. Ind. ii. 508. Gaertn, l. c. t. 101 (fruit only). Bedd. Fl. Sylv. t. 204. Trans. Linn. Soc., series 2, i. t. 17 (*Stravadium acutangulum*).

A small tree with thick trunk, bark brownish grey, rough, young parts glabrous; l. 3–5 in., obovate- or oblong-oval, tapering to base, subacute at apex, crenate-serrate, bright green, not shining, venation reticulate pellucid, petiole $\frac{1}{4}$–$\frac{1}{2}$ in.; fl. about 1 in. diam. on short spreading ped., racemes 9–12 in., terminal, pendulous; cal. not closed in bud, tube very short, segm. 4 regular, broadly oval, rounded, finely ciliate, pet. small, about $\frac{1}{4}$ in., fil. about $\frac{3}{4}$ in.; fruit 1$\frac{1}{4}$–1$\frac{1}{2}$ in., oblong-ovoid somewhat narrowed to base, truncate at both ends, bluntly quadrangular, capped with small cal.-segm.

Dry region, round margins of tanks and similar places; rather common. Jaffna; Mannar; Trincomalie; Kantalai; Batticaloa. Fl. June–August; pet. cream-coloured, stam. dark bright crimson.

Also in Peninsular India, Malaya, and N. Australia.

Wood white, moderately heavy, even-grained. The fruit is chewed as a remedy for sore throat; it is also considered efficacious in rheumatism.

Miers (l.c. 81) maintains as a separate species *S. obtusangulum*, Bl., and quotes for it the C. P. number above given. I can find nothing to warrant the separation; the angles of the fruit are always obtuse, as shown in the excellent original figure of Gaertner.

4. CAREYA,* *Roxb.*

Tree, l. alternate, fl. in crowded erect spikes; cal.-tube adnate to ov. and not produced beyond it, segm. 4, imbricate; pet. 4, imbricate; stam. very numerous, epigynous, in many rows, connate at base, fil. very long; ov. inferior, 4-celled, with numerous ovules in 2 rows on axile placentas, style long, simple; fruit large, fleshy, indehiscent, with numerous seeds immersed in the flesh; embryo without cotyledons (macropodous), no endosperm.—Sp. 3; all in *Fl. B. Ind.*

C. arborea, *Roxb. Hort. Beng.* 54 (1814). **Kahata,** *S.* **Kachaddai,** *T.*

Thw. Enum. 119. C. P. 3169.

Fl. B. Ind. ii. 510 (not given for Ceylon). Wight, Ill. tt. 99, 100, copied in Bedd. Fl. Sylv. t. 205 (poor).

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* Named after Dr. William Carey, the missionary, superintendent of the Botanic Garden at Serampore, and editor of Roxburgh's *Flora Indica.* Died 1834.

A small or middle-sized tree, with very thick, rough, dark-grey bark and a small rounded head, young branches with very prominent leaf-scars, growing parts quite glabrous; l. large, 6–12 in., usually sessile, broadly obovate, much tapering to base, very obtuse or rounded at apex, denticulate-crenate, thick, smooth and shining on both sides, pale green, veins pellucid; fl. large, $3\frac{1}{2}$–4 in. diam., sessile, crowded in very thick, swollen, hard terminal spikes, each with a central oval bract and two lateral linear ones; cal.-tube about 1 in., campanulate, glabrous, segm. rounded, stiff, erect; pet. 2–$2\frac{1}{2}$ in., ovate, obtuse or acute, margin often revolute; fil. about as long as pet., spreading; style a little longer than stam.; fruit $2\frac{1}{2}$–3 in., globular, apple-like, green, glabrous, crowned with persistent cal.-segm. and style, solid, with the cells nearly obliterated, seeds several immersed in the flesh.

Moist region, especially on exposed patana land, up to 5000 ft.; very common. Also rarely in the dry region, *e.g.*, Mulliativu. Fl. Nov.–March; pet. pale green, fil. pale pink.

This is the 'Patana Oak' of the English, and almost the only tree (besides *Phyllanthus Emblica*) on the barren grassy patanas. The remark in Fl. B. Ind., 'No example from Ceylon' (which, doubtless, has reference merely to the Kew Herbarium), is calculated to mislead, as this is one of our most familiar trees.

Moon has this only under the Sinhalese name (Cat. pt. 2, 8). I find no earlier record for it.

Heart-wood dark reddish-brown, heavy, moderately hard, even-grained, very durable. The bark is very astringent, and is much used in medicine as well as for tanning. The inner bark gives a strong fibre.

LIII.—MELASTOMACEÆ.

Trees, shrubs, or herbs, l. opp., fl. regular, bisexual; cal.-tube adnate to whole or base of ov., and more or less prolonged above it, segm. 3, 4, or 5; pet. same number as cal.-segm., contorted in bud; stam. 3, 8, or 10 inserted at edge of cal.-limb, anth. large, opening by 1 or 2 terminal pores, connective often with appendages at base; ov. wholly or half inferior, 3- 4- or 5-celled (1-celled in *Memecylon*) with numerous ovules on axile (or free central) placentas, style simple; fruit a dehiscent capsule or an indehiscent fleshy or dry berry, many-seeded (1-seeded in *Memecylon*); seed without endosperm, cotyledons small (larger and much folded in *Memecylon*).

Seeds numerous.
  Fruit capsular.
    Pet. 4 or 5.
      Shrubs or herbs.
        Stam. equal . . . . 1. OSBECKIA.
        Stam. unequal . . . . 2. MELASTOMA.
      Epiphytic climber . . . . 3. KENDRICKIA.
    Pet. 3 . . . . 4. SONERILA.
  Fruit baccate . . . . 5. MEDINILLA.
Seed solitary (*Memecyleæ*) . . . . 6. MEMECYLON.

The most recent account of this large Order (which is mainly American) is by Cogniaux in Monograph. Phanerog. vi. (1891).

Of our 52 species (of which more than half belong to one genus, *Memecylon*) only one, *Osbeckia zeylanica*, is found to be restricted to the dry region; the rest are all natives of the low country or montane zone of the moist region, many species of *Osbeckia* and *Sonerila* being very characteristic of the higher hills; and only *Osbeckia aspera* and *Memecylon umbellatum* and *M. capitellatum* extend also into the dry country. No less than 35 of our species (including 20 of *Memecylon*) appear to be endemic.

1. **OSBECKIA**,* *L.*

Shrubs or herbs, generally bristly-hairy; l. opp., 3–7-nerved, fl. usually large, in small terminal cymes; cal.-tube usually campanulate, adnate to lower half of ov. and prolonged above it, generally covered with hairs, scales or stellate processes, segm. 4 or 5, usually deciduous; generally with small bristle-pointed teeth alternating with them; stam. 8 or 10, equal, anth. large, obtuse or attenuate or beaked, connective not produced at base, but often with 2 tubercles there; ov. ½-inferior, 4–5-celled, with very numerous ovules in each cell; fruit capsular, enclosed in cal.-tube and partially adnate to it below, dehiscent loculicidally from apex by pores or short valves, seeds very numerous, kidney-shaped.—Sp. 51 (Cogniaux); 26 in *Fl. B. Ind.*

Pet. 4.
  Anth. not beaked.
    Stems prostrate, softly hairy . . . . 1. O. ERYTHROCEPHALA.
    Erect shrub, scabrous . . . . . 2. O. RHEEDII.
  Anth. beaked; annual herb . . . . 3. O. ZEYLANICA.
Pet. 5.
  Cal.-tube with hairs, scales, or bristles.
    Cal. with simple hair, or hairy or fringed scales.
      L. hairy above.
        L. 5-nerved . . . . . . 4. O. ASPERA.
        L. 3-nerved . . . . . . 5. O. WALKERI.
      L. glabrous above . . . . . 6. O. BUXIFOLIA.

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* In honour of Peter Osbeck, who travelled and collected in Japan and China in 1751.

Cal. with stellate stalked processes.	
Much-branched bush	7. O. RUBICUNDA.
Prostrate herb	8. O. MOONII.
Cal.-tube nearly glabrous	9. O. OCTANDRA.

1. **O. erythrocephala,** *Naud. in Ann. Sc. Nat.*, ser. 3, xiv. 58 (1850). **Bowitiya,** *S.*

O. truncata, Arn. (non Don) and *O. parvifolia*, Arn. in Hook. Comp. B. Mag. ii. 308. *O. Leschenaultiana*, Thw. Enum. 104 (non DC.). Cogn. Mon. 328. C. P. 1576, 284.

Fl. B. Ind. ii. 514 (*O. cupularis*, Don, var.) and 515 (*O. parvifolia*). Wight, Ic. t. 996 (*O. Leschenaultiana*).

Stems numerous, prostrate or ascending, long, cylindrical below, quadrangular above, slightly branched, reddish-purple, covered with long spreading hair ; l. variable in size, $\frac{1}{2}$–$1\frac{1}{2}$ in., broadly oval, rounded at base, acute at apex, finely ciliate-serrate, densely and softly hairy on both sides, 5-nerved, petiole $\frac{1}{8}$ in., hairy ; fl. 1–$1\frac{1}{4}$ in., on short ped., cymes sessile, dense, capitulate ; cal.-tube urceolate, thickly set with simple bristly hair below and with stalked stellate processes above ; cal.-segm. 4, triangular, ciliate, with a large stellate tuft at apex ; pet. 4, roundish ; stam. 8, anth. blunt ; ov. with coarse erect bristles on top.

Montane region, especially in upper zone ; very common. Fl. all the year ; pale pink.

Also in S. India ?

An abundant plant on the open patanas and variable in the amount of hair on stem and leaves. A small form, *O. parvifolia*, Arn. (originally based on a specimen of Walker, n. 332) is figured in Bot. Reg. t. 565 under the name *O. zeylanica*, and with the fl. pure white. C. P. 284 (from N. Eliya) has much longer anthers, and the flowers occasionally 5-merous ; it was regarded by Thwaites as probably a hybrid with *O. rubicunda* or *O. aspera.*

This never turns black in drying, as stated in the books.

I have thought it best to retain Naudin's specific name, which refers certainly to the Ceylon plant ; as this has almost invariably 4-merous fl., whilst *O. cupularis*, Don, of S. India, is described (W. and A. Prod. 323) as 5-merous.

2. **O. Rheedii,** *Gardn. in Thw. Enum.* 104 (1859).

Thw. Enum. 104. Cogn. l. c. 329. C. P. 129.

Fl. B. Ind. ii. 515.

A small erect bush with numerous ascending branches, branchlets quadrangular, very scabrous with prickly hairs ; l. $\frac{3}{4}$–$1\frac{1}{4}$ in., lanceolate or oval, tapering to both ends, scabrous above when young, afterwards nearly smooth, scabrous beneath with small prickles, especially on nerves beneath, stiff and rigid, pale beneath, very prominently 3-nerved, petiole short, scabrous ; fl. small, about $\frac{3}{4}$ in., nearly sessile, in

threes; cal. densely covered with simple coarse hair, segm. triangular, acute, about as long as tube, persistent; pet. 4, broadly ovate, acute; anth. obtuse, with a single pore; capsule small, depressed, dehiscent by 4 valves from apex.

Upper montane zone; rare. Adam's Peak (Gardner); Ambagamuwa (Thwaites); bed of upper Maskeliya River, abundant. Fl. March; pinkish-white.
Endemic.

When dried, the leaves become coppery-brown above and golden-yellow beneath.

3. **O. zeylanica,** *L. f. Suppl. Plant.* 215 (1781).
Moon Cat. 31. Thw. Enum. 104. Cogn. l. c. 326. C. P. 1575.
Fl. B. Ind. ii. 517. Plukenet, Phytog. t. 173, f. 4.

Annual erect herb, 3–12 in. high, with long slender ascending quadrangular branches with a few adpressed bristly hairs; l. ¾–1¼ in., oblong-lanceolate, acute at both ends, finely ciliate-serrate, with a few long scattered hairs on both surfaces, 3-nerved, petiole ⅛–⅙ in., slender, hairy; fl. small, ½–¾ in., on slender bristly ped. about half as long as cal.-tube, 3–8 together in umbellate terminal cymes; cal.-tube long-campanulate, slightly contracted above, ribbed, shaggy, with numerous large stellate bristly hairs with very long rays; segm. 4, linear-lanceolate, more than half the length of tube, membranous, keeled, ciliate, tipped with stellate bristles, persistent, reflexed in fruit; pet. 4; anth. terminating in a long slender beak.

Dry region in grass; rather rare. Jaffna; Trincomalie; Batticaloa; Bintenne (Nevill). Fl. March; mauve-coloured.
Also in S. India.

4. **O. aspera,** *Bl. in Flora*, xxiv. 474 (1831). **Bowitiya,** *S.*
Fl. Zeyl. n. 172. Herm. Mus. 14. *Melastoma asperum*, L. Sp. Pl. 391; Moon Cat. 35. Thw. Enum. 105. C. P. 1568.
Fl. B. Ind. ii. 519. Burm. Thes. tt. 72, 73. Wight, Ic. t. 377 (small form).

A small shrub, with numerous slender branchlets, twigs quadrangular, hispid, purple; l. 1½–2 in., oblong-lanceolate, rounded at base, acute or subacute, often slightly twisted at apex, finely dentate-crenate, slightly hispid on both sides, especially on veins beneath, 5-nerved, the lat. ones faint, marginal, petiole ⅙–¼ in.; fl. 1½–1¾ in., cymes short; cal.-tube covered with simple bristly hairs, segm. triangular, about half as long as tube, obtuse, bristly at summit, recurved; pet. 5, ovate-deltoid, truncate; anth. with attenuate end; capsule over ¼ in., ovoid, truncate, scabrous.

Var. *β*, **minor,** *Triana, l. c.* 55 (sp.). C. P. 1569 (part).

L. very small, under ¾ in., crowded, very hairy on both

sides; cal. with many stellate or pectinate hairs mixed with the simple ones, especially at top of segm.

Var. γ, **Kleinii,** *Arn. l. c.* 309 (sp.). C. P. 1569 (506).

L. broader than in type; cal. usually densely covered with long bristles mixed with stellate hairs, and at the top with usually a few scales, terminating in a tuft of long hair; fl. generally larger, often 2½ in.

Var. δ, **Wightiana,** *Benth. in Wall. Cat.* 4060 (s.p.). Wight, Ic. t. 998. C. P. 1570.

L. oval, obtuse, more hairy, marginal veins stronger; upper part of cal. densely covered with scales, fringed by long bristles, and terminal by stellate bristly hairs; fl. larger, 2 in. or more.

Low country, and up to 4000 ft. very common. Var. β, very rare, East Matale only, collected in 1863. Var. γ, principally in the dry country; summit of Ritigala. Var. δ, lower montane zone; common. Fl. all the year; mauve colour.

Also in Peninsular India.

This is a very variable species, and *O. Wightiana* is kept as distinct in Fl. B. Ind. C. P. 506 connects it with the others. *O. minor*, Triana, is based on specimens of C. P. 1569 which were called '*forma minor*' by Thwaites; these Clarke does not appear to have seen. Cogniaux (l. c. 315) keeps it up as a species, as he does also *O. Kleinii* (l. c. 316) and *O. Wightiana* (l. c. 318).

O. glauca, Benth., is recorded from Trincomalie in Wall. Cat. n. 4073 (see Fl. B. Ind. ii. 519). It was cultivated at Kew, and is figured in Bot. Mag. t. 5085 (as *O. aspera*); the specimens in Kew Herb. from the Gardens are said to be originally from Ceylon. They have the leaves densely silky-hairy on both surfaces, but are scarcely more than a variety of *O. aspera.*

5. **O. Walkeri,** *Arn. in Hk. Comp. Bot. Mag.* ii. 309 (1836).
Thw. Enum. 105. C. P. 1571.
Fl. B. Ind. ii. 519.

A small shrub, twigs cylindrical, densely silky; l. ¾–1 in., oval or lanceolate-oval, tapering to base, subacute, edges very slightly revolute or flat, closely adpressed-hairy above, silky, especially on nerves beneath, 3-nerved, petiole short, silky; fl. 1½–1¾ in., on short ped., solitary or in threes; cal. covered with long simple silky adpressed hair, segm. linear, erect, as long as tube; pet. 5.

Var β, **Beckettii,** *Thw. in Triana,* l. c. 54 (*Bechetii* by error), C. P. 3908. L. smaller, ¼–½ in., broadly oval, stiff, coriaceous.

L. smaller, ¼–½, broadly oval, stiff, coriaceous.

Upper montane zone; rare. Horton Plains; Nuwara Eliya. Var β, Wattakelle Hill (Beckett); Knuckles Mountain. Fl. November–Feb.; mauve.

Endemic.

Triana l. c. combines with var. β *O. buxifolia*, var. *minor*, to which the leaves have much resemblance.

6. **O. buxifolia,** *Arn. in Hk. Comp. Bot. Mag.* ii. 309 (1836).
Melastoma buxifolia, Moon Cat. 35. Thw. Enum. 105. C. P. 1572.
Fl. B. Ind. ii. 518.

A flat-topped very much-branched bush 5–8 ft. high, branchlets densely covered with copious ferrugineous wool; l. very numerous, crowded, small, $\frac{3}{8}$–$\frac{3}{4}$ in., rotundate or broadly oval, rounded or subcordate at base, emarginate at apex, margin and apex revolute, upper surface striate with raised lines, nearly glabrous when mature, densely ferrugineous-woolly beneath, coriaceous, rigid, strongly 5- (or 7-) nerved, the nerves much depressed on upper surface, petioles short, with long rusty hair; fl. large $2\frac{1}{4}$ in., sessile, solitary or in threes, terminal on every twig, bracts leaf-like, close beneath and adpressed to cal.; cal. surrounded at base by long rufous setæ, tube completely covered by scales bearing tufts of long shaggy rufous hair, segm. narrowly triangular, pectinate on margin, shaggy with hair outside, glabrous within, with dense tuft of very long bristles on top; pet. 5, finely woolly-ciliate.

Var β, **minor,** *Thw. l. c.* (not *O. minor*, Triana), C. P. 2618.

L. smaller, quite glabrous above with the veins less indented; cal.-tube densely covered with very long simple rufous woolly hair.

Upper montane zone above 6000 ft.; rather common. Adam's Peak (Moon); Pedurutalagala. Var. β, Nuwara Eliya; Totapella; Adam's Peak. Fl. March, April, September; rich mauve colour.

Endemic.

There are tufts of persistent hair at each node between the leaf-bases, apparently stipular in nature. A most beautiful shrub, and very profuse in flowers.

7. **O. rubicunda,** *Arn. in Hk. Comp. Bot. Mag.* ii. 309 (1836).
Thw. Enum. 105. C. P. 52.
Fl. B. Ind. ii. 520.

A large much-branched bush, bark pale yellowish-grey. twigs sub-quadrangular, very hispid with spreading scale-like hair; l. 1–3 in., variable, oblong-oval oblong-lanceolate or somewhat ovate, rounded or subcordate at base, acute or sub-acute at apex, minutely spinous-serrate, scabrous-hairy on both sides, pale beneath, rather thick but not stiff, 5-nerved, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., very hispid; fl. very large, on very short ped., 3–8 together crowded in terminal clusters; cal.-tube thickly studded with large stalked processes with the summit expanded peltate long ciliate or stellate, segm. a little shorter

than tube, triangular-lanceolate, acute, ciliate, tipped with a stellate process; pet. 5, 1–1¼ in., finely ciliate; fruit-cal. almost prickly with the hardened persistent bases of the stellate processes.

Upper montane zone to 7000 ft.; common. About Nuwara Eliya abundant; Ramboda; Matale; Galagama; Elk Plains. Fl. Jan.–April, October; brilliant purplish-crimson.

Endemic.

A very showy plant, the flowers often over 2½ in. across, and produced in great abundance. Variable in form and size of leaf. When withering the leaves turn a bright orange-scarlet on upper surface.

O. elliptica, Naud, l. c. 62, is referred to this by Thwaites and Triana, but Cogniaux (l. c. 320) maintains it as distinct, distinguished by l. rounded at both ends and 3-nerved, and broadly triangular cal.-segm.

8. **O. Moonii,** *Thw. Enum.* 105 (1859).

Melastoma repens, Moon Cat. 35. Thw. Enum. 105. Cogn. l. c. 319. C. P. 2800.

Fl. B. Ind. ii. 520.

Herbaceous, stems long, prostrate, rooting at the nodes, bristly-hairy; l. oval 1½–2½ in., acute at both ends, entire, coarsely hairy on both sides, 5-nerved, petiole ¼–⅜ in.; fl. rather small, about 1 in., on slender hairy ped., usually in threes, terminating short erect axillary branches from the prostrate stems, bracts small, rotundate; cal.-tube shortly campanulate, thickly studded with long spreading processes, which are bristly on the sides and expand at summit into a peltate head with long radiating bristles, segm. linear-lanceolate nearly equalling tube, strongly ciliate and bristly, intermediate teeth conspicuous, very bristly; pet. 5, ciliate; anth. moderately attenuate.

Low moist country; rare. Colombo (Moon); Sittawaka; Paregodde; Kuruwita Korale. Fl. Sept.–Jan.; purplish-pink.

Endemic.

9. **O. octandra,** *DC. Prod.* iii. 142 (1828).

Herm. Mus. 36. Fl. Zeyl. n. 173. *Melastoma octandra*, L. Sp. Pl. 391. *O. polycephala*, Naud. in Ann. Sc. Nat., ser. 3, xiv. 67. *O. virgata*, Don, Thw. Enum. 105. C. P. 507, 2619.

Fl. B. Ind. ii. 521. Wight, Ic. t. 376 (not good).

A small erect shrub, with many erect virgate branches, bark pale reddish-brown, flaking off in fibrous pieces, young shoots quadrangular, hispid with adpressed bristly hairs; l. narrowly lanceolate or oblong-lanceolate, shortly tapering to base, subacute, very faintly serrate, ciliate, almost entirely glabrous above, glaucous green and with scattered long hairs beneath, 3-nerved, petiole ⅛ in., flat, hairy; fl. about 1½ in., on stout hairy ped. about half length of cal.-tube, numerous in close corymbose or paniculate terminal cymes; cal.-tube long-

campanulate, faintly ribbed, usually perfectly glabrous, occasionally with scattered simple or stellate bristly hairs, segm. narrowly triangular, not half length of tube, ciliate, tipped with a bristle or large stellate hair, intermediate teeth large; pet. 5, rounded, ciliate; anth. attenuate; ov. with a tuft of long hairs on summit.

Moist low country and extending up to 5000 ft.; common. Fl. all the year; pale purplish-pink, often nearly or quite white.

Also in South India.

O. polycephala, Naud., is based on C. P. 507 in Hb. Kew, and is maintained by Cogniaux (l. c. 314). I fail to see any difference from ordinary *O. octandra* beyond the presence of a few stellate hairs on the cal.-tube.

It is difficult to understand why Linnæus should have given the name *octandra* to this 10-stamened plant; Don's later one is very much more appropriate.

2. MELASTOMA,* *L.*

A large shrub with the young shoots bristly-hairy, l. opp., fl. large in terminal cymes; cal.-tube adnate to base of ov. and prolonged beyond it, covered with simple scaly hairs, segm. 5, deciduous with minute bristle-pointed teeth between them; pet. 5; stam. 10, unequal, those opp. cal.-segm. with purple anth. and the connective much produced below and ending in two blunt projections, those opp. pet. with yellow anth. and the connective very short with 2 small projecting lobes; ov. ½-inferior, 5-celled with very numerous ovules on large axile placentas, fruit small, irregularly dehiscent, with very numerous seeds; seed small, kidney-shaped, embryo curved, no endosperm.—Sp. 37 (Cogniaux); 6 in *Fl. B. Ind.*

M. malabathricum,† *L. Sp. Plant.* 390 (1753). **Mahabowitiya,** *S.*

Herm. Mus. 10. Burm. Thes. 155. Fl. Zeyl. n. 171. Moon Cat. 35. Thw. Enum. 106. Cogn. Mon. 349. C. P. 1574.

Fl. B. Ind. ii. 523. Wight, Ill. t. 95.

A much-branched bush, with cylindrical branchlets at first covered with red bristly forward-pointing hairs, afterwards with thin yellowish fibrillose bark; l. 2½–6 in., lanceolate,

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* From μέλας, black, and στόμα, mouth, from the staining of the lips, which results from eating the fruit. The name first given by Burman, who took it from Hermann, who says the plant was called 'Bocca preto' by the Portuguese for this reason.

† Linnæus seems to have thought this to be the source of the *folia malabathri*, at one time much used as a medicine in Europe. This name of the old pharmacists was a corruption of the Indian one, Tamalapattra, and the leaves really those of *Cinnamomum Tamala*, trees.

acute at both ends, faintly ciliate- or spinous-denticulate, slightly scabrous above with short adpressed hairs, hispid on the veins beneath, finely softly hairy between them, 5-nerved, the outer ones fine and close to margin, petiole $\frac{3}{8}$–$\frac{3}{4}$ in., fl. large, 1$\frac{1}{2}$–3 in., ped. about as long as cal.-tube, clothed with hair-scales, in trichotomous, few-flowered, terminal paniculate cymes; cal.-tube broadly campanulate, completely covered with adpressed, lanceolate, silvery hair-scales, segm. variable, linear- to broad-lanceolate usually about as long as tube, spreading, glabrous within; pet. narrowed to base, rounded or truncate; connectives of long anth. curved over the short ones; ov. bristly-hairy on summit, style erect, longer than stam. and standing over them; fruit softly coriaceous, about $\frac{1}{2}$ in., broadly ovoid, bursting irregularly, usually in a circle, and exposing the 5 large purplish-black pulpy placentas covered with numerous minute seeds.

Moist low country up to 3000 ft.; very common. Fl. all the year; violet-mauve-coloured.

Throughout the Indian Peninsula.

The pulp of the ripe fruit is edible, and Moon calls the plant the 'Black Strawberry tree.'

M. ellipticum, Naud. in Ann. Sc. Nat., ser. 3, xiii. 291, is from Ceylon, collected by Leschenault. From the description I cannot see how it differs from *M. malabathricum*. *M. Royenii*, Bl. in Flora ii. 483, also from Ceylon, is referred by Thwaites also to the present species, which, indeed, does not vary much, save in the cal. segments.

3. **KENDRICKIA,*** *Hk. f.*

An epiphytic climbing shrub, l. opp., fleshy, fl. large, in terminal umbels; cal. very fleshy, tube adherent to ov. and slightly prolonged beyond it, segm. 4; pet. 4, large, spreading, fleshy; stam. 8, equal, anth. opening by a single pore, connective produced at base into a short horn-like process; ov. inferior, 4-celled, with very numerous ovules, style simple, stout; fruit a capsule, 1-celled by absorption of septa, splitting from above into 4 valves; seeds very numerous, closely packed, prismatic.—Monotypic.

K. Walkeri, *Hk. f. in Benth., and Hk. f. Gen. Plant.* i. 752 (1865). *Medinilla (?) Walkerii*, Wight, Ill. i. 217; Gardn. in Calc. Journ. viii. 11. *Pachycentria Walkeri*, Thw. Enum. 107. Cogn. Mon. 469. C. P. 385.

Fl. B. Ind. ii. 526. Bedd. Ic. t. 271 (very poor).

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* Named in honour of G. H. Kendrick Thwaites, Director of the Royal Botanical Gardens, Peradeniya, from 1849 to 1880. The name *Thwaitesia* had been previously given in 1846 to a genus of Algæ. Died 11 Sept. 1882.

An epiphytic scandent shrub, the young stems climbing to a great height by copious slender adventitious roots, branches cylindrical or young ones quadrangular, stout, bark pale yellow, smooth, shining, flaking off in rectangular pieces, young parts scurfy; l. on the young climbing branches small, 1–1½ in., lanceolate, acute, ciliate-dentate, on the flowering shoots larger, 2–2½ in., oval or oblong, acute at base, obtuse, entire, glabrous, thick, 5-nerved, the lat. nerves joining the midrib, bright green and shining above, pale and dull beneath, petiole very short, stout; fl. large, 2½–3 in., 3–8 together in terminal umbels, ped. 1–1½ in., stout, bracts small, oblong, obtuse; cal.-tube turbinate, ovoid, glabrous, limb short spreading, segm. short, fleshy, pointed; pet. ovate-rotundate, fleshy, spreading; top of ov. 4-lobed, glabrous, style longer than stam.

Climbing over trunks of trees in the forests of the lower montane zone, and extending down to 2000 ft. in the Kukul Korale; common. Fl. January to May; bright clear rose colour, cal. red.

Also found in the Anamallay Hills, S. India.

A very lovely plant when in flower, and a great ornament to the lower hill-forests, reaching to the tops of high trees. The mode of climbing is precisely like that of ivy, the young shoots and leaves being pressed close to the bark and clinging to it by numerous rootlets, whilst the flowering branches stand away from the support.

The leaves vary in form, and are sometimes suborbicular and rounded at the base.

4. SONERILA,* *Roxb.*

Herbs often woody at base, l. opp., fl. in scorpioid terminal racemes; cal.-tube connate below with ov. and prolonged beyond it, segm. 3, small, usually deciduous; pet. 3, ovate, acute; stam. 3, anth. blunt or pointed or rostrate, opening by 2 pores, cells more or less divergent at base; ov. inferior, 3-celled, with numerous horizontal ovules; fruit a trigonous capsule, dehiscing at summit by 3 short valves, seeds very numerous, usually muriculate, with minute tubercles.—Sp. 70 (Cogniaux); 43 in *Fl. B. Ind.*

The species have been unduly multiplied by botanists; for Ceylon there are 15 given by Thwaites and 16 in Fl. B. Ind., and Cogniaux makes as many as 21. In a recent paper by Stapf (Ann. Bot. vi. 291, 1892), many of these are reduced to *S. zeylanica* and *S. Wightiana*, and he has clearly shown that the length of the anthers does not afford a sufficient character for separating species.

It is probable that natural hybrids not unfrequently occur in this genus.

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* *Soneri-ila*, the native Malabar name as given by Rheede.

Stem erect.	
L. 3–7-nerved.	
Nerves from the base of leaf.	
L. stalked.	
L. glabrous beneath.	
Capsule small, as long as or shorter than ped.	
L. 5-nerved, unequal at base . .	1. S. ZEYLANICA.
L. 3-nerved, equal at base. . .	2. S. RHOMBIFOLIA.
Capsule large, much longer than ped .	3. S. BRUNONIS.
L. more or less hairy beneath.	
L. glabrous above.	4. S. ARNOTTIANA.
L. hairy above.	
L. oval	5. S. WIGHTIANA.
L. ovate-cordate	6. S. HIRSUTULA.
L. sessile or nearly so.	
L. hairy above.	
Capsule broadly ovoid . . .	7. S. GARDNERI.
Capsule campanulate . . .	8. S. ROBUSTA.
L. quite glabrous	9. S. LANCEOLATA.
Nerves from the midrib (penninerved) . .	10. S. PILOSULA.
L. 1-nerved, linear	11. S. LINEARIS.
Stem creeping, l. penninerved	12. S. PEDUNCULOSA.

1. **S. zeylanica,** *W. and A. Prod.* 322 (1834).
Arn. in Comp. Bot. Mag. ii. 307. Thw. Enum. 109. C. P. 349, 3345. Fl. B. Ind. ii. 530.

An erect annual herb, 3–12 in. high, much branched above, branches quadrangular, glabrous; l. $\frac{1}{2}$–1 in., ovate-lanceolate, acute, sharply dentate-serrate, with conspicuous scattered bristly hairs above, glabrous and paler beneath, usually very unequal at base, 5-nerved, thin, petiole at least half as long as l., slender; racemes 2–6-fld., pet. very acute; anth. short, blunt, or pointed; fruit with tapering ped. $\frac{3}{8}$ in., ped. less than half the length, narrowly turbinate, prominently 6-ribbed, glabrous.

Var. β, **pumila,** *Clarke.* *S. pumila,* Thw. Enum. 109. Cogn. l. c. 492. C. P. 2617.

Smaller, branched from the base; l. broader, usually with white dots above and purple beneath; anth. very blunt; capsule with ribs less prominent.

Var. γ, **cordifolia,** *Thw. ms.* *S. cordifolia,* Cogn. l. c. 502. C. P. 2893.

L. cordate at base, petioles longer than l.; anth. pointed, capsule very short, $\frac{1}{8}$ in., campanulate, shorter than ped.

Var. δ, **affinis,** *Trim.* *S. affinis,* Arn. l. c. 307. Thw. Enum. 109. C. P. 353. Fl. B. Ind. ii. 533.

L. ovate, more coarsely toothed with spreading serrations; cal. slightly hairy; anth. attenuate; capsule campanulate,

½ in., considerably shorter than curved long ped., the ribs not prominent.

Var. ε, **rostrata,** *Clarke.* *S. rostrata*, Thw. Enum. 108. C.P. 2644.

L. less sharply serrate, anth. rostrate, long-acuminate, capsule campanulate under ⅜ in., rounded at base, rather shorter than ped., ribs slightly marked.

Montane zone, and extending down into moist low country; common. Var β, very common at higher elevations. Var. γ, only found as yet in Singhe Raja Forest. Var. δ, Watagoda. Var. ε, Ambagamuwa; Hiniduma; Reigam Korale. Fl. all the year; pink, var. β white.

Endemic.

Var. γ, with its very short capsule, has some claim to specific rank. Clarke (l. c. 531) has another var., *Walkeræ*, differing from the type in its seeds being smooth without the usual minute elevations.

2. **S. rhombifolia,** *Thw. Enum.* 108 (1859).
S. glaberrima, Arn. in Comp. Bot. Mag. ii. 307 (ex Clarke). C. P. 2799.
Fl. B. Ind. ii. 533.

Stem 6–12 in., stout, quite glabrous, branches obscurely quadrangular; l. ¾–1½ in., broadly oval-ovate, often somewhat rhomboid, acute at both ends, shallowly crenate-serrate, upper portion quite glabrous, 3-nerved, equal at base, pale or purplish beneath, petiole half as long as l. or more; cal.-segm. large, triangular, acute; anth. acuminate; capsule with tapering ped. barely ⅜ in., of which ped. is about half, with strong ribs.

Var. β, **angustata,** *Thw. ms.* *S. angustata*, Triana, l. c. 498. Fl. B. Ind. ii. 536.

L. lanceolate-oblong, the lat. nerves faint; cal.-segm. narrow, very acute.

Moist low country; rare. Kukul Korale; Hiniduma; Adam's Peak (Moon); Var. β, Galle district (Fl. B. Ind.). Fl. Dec.; deep pink.

Endemic.

Triana, followed by Clarke, Cogniaux, and Stapf, considers var. β as a quite distinct species; but by the latter *S. rhombifolia* itself is regarded as merely robust *S. zeylanica*. Arnott's name is the older, and, if certainly the same plant, should be adopted. Cogniaux (l. c. 499) keeps *S. glaberrima* as distinct.

3. **S. Brunonis,** *W. and A. Prod.* 321 (1834).
Cogn. l. c. 493. C. P. 662 (in Hb. Kew).
Fl. B. Ind. ii. 531. Wight, Ill. t. 94; Ic. t. 1059.

Stem 12 in., rather stout, branches quadrangular, nearly glabrous, l. ovate on long petioles, bristly-serrate, 5–7-nerved at base; pet. lanceolate, anth. short, pointed; capsule, including much tapering ped., fully ½ in., of which ped. is about a third, very strongly ribbed.

Upper montane zone. 'Nuwara Eliya, 1846' (Gardner). Fl. 'Jan.' Also in S. India.

I do not know this species. The Kew specimens of C. P. 662, which are those presumably referred to in Fl. B. Ind., have very large capsules. Thw. afterwards merged C. P. 662 in C. P. 349 (*S. zeylanica*), and Cogniaux quotes the latter number, and also C. P. 353 (*S. affinis*) in part for *S. Brunonis*.

Wight (Ill. l. c.) colours the petals a bright light blue!

4. **S. Arnottiana,** *Thw. Enum.* 108 (1859).
C. P. 2615.
Fl. B. Ind. ii. 531. Bedd. Ic. Ind. Or. t. 300.

Stem 1–2 ft., branched above, more or less glandular-hairy; l. 1½-3 in., lanceolate, tapering to both ends, acute or obtuse at apex, more or less unequal at base, finely spinous-serrate, glabrous above, paler and with a few coarse hairs on veins beneath, 3- or 5-nerved, petiole half as long as l., glandular-pilose; racemes glandular-hairy, often forked; cal.-tube glandular-hairy; anth. short, pointed; capsule short, strongly ribbed, asperous.

Var. β, **tomentella,** *Trim.* *S. tomentella*, Thw. Enum. 109. C. P. 2616.

Stem shorter, clothed with short spreading hair, not glandular; l. smaller, very unequal at base, almost entire, with a few scattered hairs above, tomentose on the veins beneath; racemes and cal. not glandular but densely and finely hairy; anth. not pointed.

Montane zone, 4000–7000 ft.; rather rare. Horton Plains; Bopatalawa; Ambagamuwa; Maskeliya. Var. β, Agrawatte; Ambagamuwa. Fl. March and April; pale pink.

Also in Anamallays, S. India (?).

5. **S. Wightiana,** *Arn. in Comp. Bot. Mag.* ii. 307 (1836).
Cogn. l. c. 495. C. P. 3907.
Fl. B. Ind. ii. 532.

Stems 1 ft. or more high, much branched, somewhat flexuose, rough with coarse rufous bristly hair; l. 1–1½ in., oval, very unequal at base, acute or subacute, sharply serrate, rough with scattered short bristly hairs on both sides, 5-nerved, petiole about ½ in., roughly hairy; fl. rather large, ¾ in., ped. with strigose hair; cal.-tube very hairy, segm. oval, acute; pet. long-clawed, very acute; anth. short, very blunt; capsule ¼ in., strongly ribbed, scabrous.

Var. β, **Hookeriana,** *Trim.* *S. Hookeriana*, Arn. l. c. 308. Thw. Enum. 108. C. P. 173.

Larger and semi-woody at base, stems more villose with longer hair; l. less unequal at base, rounded or obtuse at

apex; cal.-tube slightly hairy, segm. often strongly ciliate anth. bluntly pointed.

Montane zone; rare. Adam's Peak; Dolosbagie; Var. β only at the foot of the cone of Adam's Peak on the southern side. Fl. March and April; pale pink.

Endemic.

I follow Stapf in combining these under one species. Thwaites considered some of his specimens to be hybrids between the two.

6. **S. hirsutula,** *Arn. in Comp. Bot. Mag.* ii. 307 (1836). [PLATE XXXIX.]
Thw. Enum. 108. Cogn. l. c. 503. C. P. 276.
Fl. B. Ind. ii. 534.

Stems 2 ft. or more high, semi-woody at base, much branched, densely covered, especially at nodes, with long, stiff, spreading hair; l. 1–1½ in., broadly ovate, rounded or cordate at base, obtuse at apex, spinous-serrate, very hairy on both sides, usually 7- (sometimes 5-) nerved, petiole variable, often longer than l., very hairy; racemes short, few-flowered, hairy, fl. large, about 1 in.; cal. hairy; anth. elongated, rostrate, the cells divaricate at base; capsule over ¼ in., nearly smooth, ribs prominent.

Upper montane zone; rare. Pedurutalagala; foot of Totapella; Horton Plains. Fl. Jan.–April; deep rosy-pink or pale purplish.

Endemic.

A beautiful plant, the flowers nearly as large as those of *S. Gardneri.*

7 **S. Gardneri,** *Thw. Enum.* 107 (1859).
Cogn. l. c. 496. C. P. 63.
Fl. B. Ind. ii. 532. Bedd. Ic. Ind. Or. t. 298.

Stem 1–1½ ft. high, woody below, very slightly branched, densely covered with short, dark red, glandular hairs; l. ¾–1¼ in., very shortly stalked, broadly ovate, rounded or subcordate at the equal base, acute or obtuse at apex, finely spinous-serrate, hairy on both sides, paler beneath, 5- or 7-nerved; raceme lax, glandular-hairy, fl. very large, over 1 in., cal. glandular-hairy; anth. shortly acuminate, not beaked; capsule ⅜ in., broadly ovoid, faintly ribbed, glandular-pubescent.

Var. β, **firma,** *Thw. ex Triana, l. c.* 75 (sp.). C. P. 3873.

L. under ½ in., crowded and overlapping, quite sessile; fl. smaller, fruit not seen.

Montane zone at about 5000 ft.; very rare. On the southern slope of Horton Plains near Galagama, first found by Gardner. Var. β, on Wattekelle Hill; on Adam's Peak. Fl. Feb., March; dark pink.

Endemic.

This and *S. hirsutula* have the largest flowers of the Ceylon species. Very distinct by its capsule. A plant from Dumbanagala Hill, Rangala, seems to be this, but is not in fl. or fruit.

8. **S. robusta,** *Arn. in Comp. Bot. Mag.* ii. 308 (1836).
Thw. Enum. 107. C. P. 426.*
Fl. B. Ind. ii. 533 (including *S. Harveyi*).

Stem arising from a short rootstock with thick fleshy scales, 1–2 ft. high, branched above, shaggy with long, spreading, stiff, rufous hair; l. numerous, closely placed, often overlapping, ½–1 in., very shortly stalked or nearly sessile, broadly oval, rounded or subcordate at equal base, obtuse, finely serrate-ciliate, rufous-hairy above with long hairs, glaucous with scattered hairs beneath, strongly 5-nerved, often with two other fainter ones; raceme short, subumbellate, with long rufous hair; fl. rather large, under 1 in., anth. long-acuminate, capsule campanulate, strongly muriculated.

Var. β, **glabricaulis,** *Thw. in Fl. B. Ind.* l. c. C. P. 3955.

More slender, stems glabrous; l. more rotundate, quite glabrous beneath, conspicuously 7-nerved, fl. smaller.

Var. γ, **Harveyi.**† *S. Harveyi,* Thw. Enum. 107. *S. Hartwegi,* Triana, l. c. (errore typogr.) C. P. 2974.

As in var. β, but anth. short, apiculate or somewhat acuminate.

Upper montane zone; very rare. Only found on Adam's Peak, where it is abundant near the base of the cone. Var. β, Bopatalawa. Var. γ, between Maturata and Ramboda, near Palagala at about 6000 ft. Fl. March and October; bright pink, calyx purple.

Endemic.

The type has some resemblance to *S. Hookeriana,* from which its sessile leaves readily distinguish it. The remarkable scaly rootstock, in appearance like that of *Lathræa,* does not seem to be always present. Triana combines *glabricaulis* with *S.* '*Hartwegi*' (= *Harveyi*), and they are scarcely distinguishable.

9. **S. lanceolata,** *Thw. Enum.* 107 (1859).
C. P. 3007.
Fl. B. Ind. ii. 535. Bedd. Ic. Ind. Or. t. 299.

Stems 2–4 ft. with divaricate branches, quadrangular, quite glabrous; l. large, 2–3½ in., sessile, or very nearly so, narrowly lanceolate, more or less cordate at base, attenuate and sub-acute at apex, faintly serrate in upper part, perfectly glabrous on both sides, 3-nerved; fl. large, about 1 in., racemes long-stalked; cal. glabrous, segm. triangular, acute, anth. acuminate, not rostrate; capsule over ¼ in., long-funnel-shaped, glabrous, with broad thick ribs.

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* Some of C. P. 426 is said in Fl. B. Ind. to be *S. Hookeriana.*

† Commemorates W. H. Harvey, Professor of Botany in Dublin University, and a distinguished Algologist. He spent three months in Ceylon in 1853 on his way to Australia, and was with Thwaites when this plant was gathered.

Moist low country; very rare. Karawita Kande; Kukul Korale; Panadure. Fl. March and September; rose-coloured.

Endemic.

A handsome large plant, suitable for cultivation; very unlike the other species.

10. **S. pilosula,** *Thw. Enum.* 108.
Cogn. l. c. 506. C. P. 2687.
Fl. B. Ind. ii. 534.

Stem 6–12 in. high, with subterete pubescent branches; l. large, 2–3½ in., ovate-lanceolate, very unequal-sided at base, acuminate, obtuse, serrate, pubescent on both sides, flaccid, often purple beneath, 7–9-nerved, the lat. nerves coming off from the midrib above the base (and thus penninerved), petiole long, hairy; fl. about ¾ in., cal. hairy; anth. long, acuminate; capsule funnel-shaped, muriculate.

Moist low country; very rare. Only found at Palabadala, Kuruwita Korale. Fl. March; dark rose-coloured.

Endemic.

The only Ceylon species with penninerved leaves except *S. pedunculosa.*

11. **S. linearis,** *Hook. f. ex Triana in Trans. Linn. Soc.* xxviii. 76 (1871).
*S. Guneratnei,** Trim. in Journ. Bot. xxiii. 208; Cogn. l. c. 498. C. P. 4012.
Fl. B. Ind. ii. 536 (not given for Ceylon).

Stems erect, 12–15 in. high, woody below, cylindrical, with very numerous weak, slender, spreading branches, quadrangular, quite glabrous, purplish red; l. apparently in whorls of 4, sub-sessile, ½–¾ in., linear-strap-shaped, tapering at base, obtuse at apex, entire below, with a few distant sharp serrations in upper third, glabrous, thick, pale beneath, with very prominent midrib, no side nerves; fl. in small very short recemes or solitary, about ⅝ in. diam., ped. slender, glabrous, segm. fleshy, oblong-oval, obtuse; anth. acuminate but not rostrate; capsule small, under ¼ in., funnel-shaped, much tapering at base, quite glabrous, strongly ribbed.

Moist low country; very rare. Near Hewesse, Pasdun Korale (1878), Dotalu Kande, Kukul Korale (1891). Fl. August, Sept.; bright mauve-pink.

Also in Burma.

The apparently whorled leaves consist of 2 pairs very closely inserted and decussate. When describing this in 1885 I had not had an opportunity of comparing it with *S. linearis.* Since examining Lobb's specimens in Herb. Kew from Moulmein, I am, however, convinced it is the same species. Cogniaux, however, maintains it as separate.

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* Commemorates Don Seman de Silva Guneratne, for many years plant-collector for the Peradeniya Botanic Gardens, and the discoverer of many novelties. He died in 1886.

12. **S. pedunculosa,** *Thw. Enum.* 109 (1859).
Cogn. l. c. 493. C. P. 3091.
Fl. B. Ind. ii. 531.

Stems prostrate, rooting at the nodes, with long internodes, glabrous; l. $1\frac{1}{2}$–$2\frac{1}{4}$ in., broadly ovate, rounded or subcordate at base, obtuse or rounded at apex, finely crenate-serrate, with numerous scattered coarse hairs above, nearly glabrous beneath, penninerved, flaccid, often purplish beneath; racemes small, at end of long, erect, slightly glandular-pilose peduncles terminating short axillary branches; fl. small, $\frac{1}{2}$ in. diam.; cal. with scattered glandular hairs; anth. short, acute; capsule small, under $\frac{1}{6}$ in., turbinate, smooth, faintly ribbed.

Moist low country below 1000 ft.; rare. Hiniduma; Mapalagama; Pasdun Korale. Fl. Aug., Sept.; pinkish-violet.

Also in Travancore.

In a young state the leaves are crowded, and form a sort of rosette on the ground, and the peduncles look like scapes.

[*Marumia zeylanica*, Bl., is said to have been sent from Ceylon by Kœnig and Van Royen. If so, the plant must have been cultivated here, but it is more probable that the specimens were collected at Malacca or in Java.]

5. MEDINILLA, *Gaud.*

Epiphytic shrubs, l. opp., fleshy, 3- or 5-nerved, fl. few, axillary; cal.-tube campanulate, adnate to ov., fleshy, limb produced, segm. 4, obscure; pet. 4; stam. 8, equal, anth. with two short projections at base and a short spur behind; ov. inferior, 4-celled, with numerous ovules, style simple; fruit soft, crowned with cal.-limb.; seeds numerous, ovoid.—Sp. 100 (Cogniaux); 11 in *Fl. B. Ind.*

Branches cylindrical, l. 5-nerved	1. M. FUCHSIOIDES.
Branches quadrangular, l. 3-nerved . . .	2. M. MACULATA.

1. **M. fuchsioides,** *Gardn. in Calc. Journ. Nat. Hist.* viii. 12 (1847).
Thw. Enum. 106. C. P. 138.
Fl. B. Ind. ii. 548.

An epiphytic shrub, dichotomously branched, branches stout, cylindrical, marked with leaf-scars, bark smooth, greyish white; l. 2–3 in., rhomboid-lanceolate, narrowed to both ends, but rounded at the actual base, obtuse or subacute at apex, glabrous, paler and with very minute scattered glands beneath, 5-nerved, the marginal pair faint, the others strongly marked, petiole very short, stout, crimson; fl. rather large, $\frac{3}{4}$ in. long, solitary or 2 or 3 on a common peduncle, from axils of fallen l., pendulous, ped. as long as cal., much thick-

ened beneath fl., buds pointed; cal.-tube glabrous, segm. small, tooth-like; pet. erect, much imbricate, rotundate; anth. acute; fruit about ¼ in., subglobose, dark purple.

On trees in the upper montane zone; rather rare. Nuwara Eliya; Horton Plains; Hakgala. Fl. Feb.; bright purplish-pink.
Endemic.

2. **M. maculata,** *Gardn. in Calc. Journ. Nat. Hist.* viii. 13 (1847). [PLATE XL.]
Thw. Enum. 106. C. P. 1578.
Fl. B. Ind. ii. 548.

An epiphytic shrub with a climbing stem, very thick at base, branches opposite, very numerous, quadrangular, the angles often with a narrow undulated wing, bark grey, on young shoots purplish; l. 1–2 in., variable, more or less oval, rounded or subcordate at base, obtuse, rounded or emarginate at apex, shallowly crenate, glabrous, dark green with purple blotches above, paler and with very minute glandular hairs beneath, somewhat fleshy, 3-nerved, petiole very short; fl. small, arranged as in last; cal.-tube urceolate, glabrous, limb spreading, almost truncate, fleshy; pet. reflexed; fruit small, under ¼ in., subglobose, truncate, red.

Var. β, **cuneata,** *Thw. Enum. l. c.* Var. *Thwaitesii*, Clarke in Fl. B. Ind. C. P. 3443.

L. larger, 2–3 in., rotundate, tapering to a long cuneate base, abruptly and shortly acuminate or retuse; fl. and fruit not seen.

Epiphytic on trees in lower montane zone; rather common. Hantane; Ambagamuwa; Ramboda; Matale; Hunasgiriya; Knuckles. Var. β, moist low country; very rare. Hewesse, Pasdun Korale. Fl. Nov.; pale pink.
Endemic.
Has much the appearance of a *Loranthus*. Var. β is very little known, and perhaps a different species.

6. MEMECYLON,* *L.*

Shrubs or trees, l. opp., entire, glabrous; fl. small, in axillary simple or compound umbellate cymes; cal.-tube campanulate, adnate to ov., limb more or less dilated, segm. 4, often ill-defined; pet. 4; stam. 8, equal, anth. short, opening by slits, connective produced into a large horn below; ov. quite inferior, 1-celled, surmounted by a depressed epigynous disk usually marked with 8 radiating ridges, style simple,

* The Greek name for the fruit of the *Arbutus*. It is not evident why Linnæus applied it to our 'Wélikaha' (*M. capitellatum*).

ovules 8–16, on a free central placenta; fruit a small dry berry, more or less globose, crowned with cal.-limb, 1-seeded; seed large, with a shell-like testa, cotyledons much folded, no endosperm.—Sp. 126 (Cogniaux); 40 in *Fl. B. Ind.*

This is one of the most difficult genera in our flora. There are probably too many species in the following enumeration, and I had hoped to materially reduce them on a critical revision. This, however, I find it impossible to do on any satisfactory principle, and the plan followed in Fl. B. Ind. of placing a number as varieties of *M. edule* in no way simplifies matters. I find Thwaites' method of grouping the Ceylon species much better than more recent ones, and have followed it here. Many of the forms he collected I have not met with alive, and they are still represented only by the C. P. specimens and drawings.

I have also several apparently undescribed species, but hesitate to publish further names in this genus.

Leaves prominently 3-nerved.	
Twigs cylindrical	1. M. ARNOTTIANA.
Twigs quadrangular	2. M. GARDNERI.
Leaves penninerved, sometimes slightly 3-nerved at base.	
Epigynous disk smooth or with radiating ridges which are not winged.	
Twigs usually 4-winged.	
L. over 8 in., veins very conspicuous	3. M. HOOKERI.
L. under 4 in., veins obscure . .	4. M. WIGHTII.
Twigs 4-angled.	
L. under 1 in.	5. M. PARVIFOLIUM.
L. over 1 in.	
L. acute at base, cymes stalked.	
L. thick, cymes dense . .	6. M. VARIANS.
L. thin, cymes few-flowered .	7. M. ELEGANTULUM.
L. obtuse at base, cymes sessile .	8. M. ELLIPTICUM.
Twigs cylindrical (occasionally subquadrangular).	
L. cordate at base (see also vars. of 3 and 4).	
L. over 6 in., lanceolate-oblong	9. M. MACROPHYLLUM.
L. under 4 in., rotundate.	
L. revolute at margin.	
Cymes sessile . . .	10. M. OVOIDEUM.
Cymes pedunculate . .	11. M. REVOLUTUM.
L. not revolute . . .	12. M. ORBICULARE.
L. not cordate.	
L. over 1 in.	
L. rounded at base, over 6 in.	13. M. PROCERUM.
L. acute or tapering at base (sometimes rounded in 15).	
L. rounded or obtuse at apex.	
L. obovate, sessile. .	14. M. CUNEATUM.
L. oval, shortly stalked.	15. M. UMBELLATUM.

L. acuminate or caudate.
L. over 4 in., fruit yellow.
L. lanceolate, thin . 16. M. CLARKEANUM.
L. narrowly linear-lanceolate thick . 17. M. DISCOLOR.
L. under 3 in., fruit purple.
L. ovate or oval.
Ped. with 2 bractlets beneath fl. . . 18. M. FUSCESCENS.
Ped. without brctlts. 19. M. ROSTRATUM.
L. linear or lanceolate-linear . . . 20. M. ANGUSTIFOLIUM.
L. under ½ in., very crowded and numerous . . . 21. M. PHYLLANTHIFOLIUM.
Epigynous disk with the ridges strongly winged (except sometimes in 26).
Twigs quadrangular.
L. over 3 in., fl. blue . . . 22. M. RHINOPHYLLUM.
L. under 3 in., fl. white . . . 23. M. LEUCANTHUM.
Twigs cylindrical.
Fruit ¾ in. diam. . . . . 24. M. MACROCARPUM.
Fruit under ⅜ in. diam.
L. not 3-nerved at base, fl. stalked.
Fl. large, buds pointed . . 25. M. LÆVIGATUM.
Fl. small, buds globose . . 26. M. GRANDE.
L. 3-nerved at base, fl. sessile . 27. M. CAPITELLATUM.

1. **M. Arnottianum,** *Wight in Thw. Enum.* 113 (1859).
Eugenia (?) capitellata, Arn. Pug. 17. C. P. 1589.
Fl. B. Ind. ii. 553.

A small bush, bark pale brown, smooth, branchlets slender, cylindrical; l. 1½–2 in., ovate-oval, subacute or rounded at base, long-caudate-acuminate, obtuse at apex, pale beneath, conspicuously 3-nerved, purplish when young, petiole very short; fl. very small, sessile, solitary or very few at apex of slender, erect, axillary peduncles ¾–1 in. long; cal.-segm. large, triangular, acute; fruit about ⅓ in., globular, blue-black.

Forests of moist low country; rather rare. Pasdun Korale; Pelawatte, abundant; Gilimale; Mapalagama. Fl. December–May; white.

Endemic.

The specimens from Gilimale have much larger leaves, 3–4 in. (var. *grandifolia*, Cogn. Mon. 1133).

Called 'Pinibaru' in Pasdun Korale, the name properly of *Eugenia Moonii*, which it somewhat resembles.

2. **M. Gardneri,** *Thw. Enum.* 113 (1859).
M. Thwaitesii, Cogn. Mon. 1134. C. P. 2387.
Fl. B. Ind. ii. 553.

A small tree, bark yellowish-grey, smooth, branches much thickened at nodes, twigs quadrangular, slightly winged at angles; l. 1½–2½ in., very shortly stalked or subsessile, usually broadly oval, but sometimes rhomboid-lanceolate or rotundate,

narrowed to base, usually shortly acuminate, obtuse, thick, pellucid-punctate, very prominently 3-nerved; fl. very small, sessile, few, in axillary fascicles, peduncle very short or 0; cal.-tube campanulate, segm. broad; pet. oval, distant, disk without radiating ridges; fruit $\frac{1}{4}$ in., purplish-black.

Moist region, principally in the lower montane zone, but going down to 2000 ft.; rather rare. Dimbula; Maskeliya; Ambagamuwa; near Ratnapura. Fl. Jan.–April; white.

Endemic.

Cogniaux distinguishes his *M. Thwaitesii* by broader and more obtuse leaves, more coriaceous and drying of a pale colour, which characters appear to indicate the form at the higher elevations.

3. **M. Hookeri,** *Thw. Enum.* 113 (1859). **Kevitiya-kéra,** *S.* (var. β).
Cogn. l. c. 1137. C. P. 2686.
Fl. B. Ind. ii. 554.

A large shrub, 6–12 ft., slightly branched, bark grey, flaking off in square pieces, branchlets stout, strongly 4-angled with narrow wings on the angles; l. very large, 8–12 in., sessile, cordate at base, oblong-lanceolate, tapering to acuminate subacute apex, penninerved, veins very prominent beneath, lat. ones numerous, joining a very strong intra-marginal one at some distance from the edge; fl. rather large (for genus), numerous, ped. slender, twice as long as cal., surrounded at base with a little involucre of acute white bractlets and brown hair-like scales, very densely crowded in large axillary clusters on the old wood, buds sharp-pointed; cal.-segm. broadly oval, acute; fruit large, $\frac{3}{8}$ in., blackish-purple.

Var. β, **exalatum,** *Trim. Syst. Cat. Ceyl.* 35. C. P. 2686.*

Branchlets perfectly cylindrical, not winged; ped. rather shorter.

Moist low country; rare. By streams in Ambagamuwa at 1000 ft. Var. β about Colmobo; common. Fl. July–November; purplish-blue, buds pink.

Endemic.

Clarke refers var. β to *M. macrophyllum*, but the texture and venation of the leaves are entirely different in that species.

4. **M. Wightii,** *Thw. Enum.* 113 (1859).
M. depressum, Benth., Triana, l. c. 158. Cogn. l. c. 1145. C. P. 2570.
Fl. B. Ind. ii. 554.

A small tree, branchlets slender, quadrangular, winged, the wings broader beneath each node; l. $2\frac{1}{2}$–$4\frac{1}{2}$ in., sessile, or very nearly so, cordate at base, lanceolate-oblong, tapering to acuminate obtuse apex, margin more or less revolute, thick, shining above, penninerved, lat. veins obscure; fl. on

slender ped. crowded in fascicles on axillary tubercles usually on the old wood, no peduncle; cal.-limb nearly truncate; disk without rays; fruit small and conspicuously crowned with cal.-limb.

Var. β, **cylindricum,** *Trim.* Wight, Ic. t. 279 (*M. amplexicaule*).

Branchlets quite cylindrical, not winged.

Lower montane zone; rather rare. Hewaheta; Maturata; Uda Pusselawe. Var. β, Central Prov. (Thwaites). Fl. March and September; bluish-white.

Also in S. India.

Var. β appears to be precisely Wight's *M. amplexicaule*, which, according to Fl. B. Ind., p. 559, is a distinct species. If that work be correct in saying that this is also *M. amplexicaule* of Roxburgh, that name should take precedence.

5. **M. parvifolium,** *Thw. Enum.* 113 (1859).
M. varians, var. *parvifolium*, Trim. Syst. Cat. Ceyl. 35. C. P. 2955, 758.
Fl. B. Ind. ii. 556.

A small tree, sometimes reaching 30 ft., with very numerous branchlets and grey finely cracked bark, twigs quadrangular; l. $\frac{3}{4}$–1 in., broadly oval or obovate-oval, tapering to base, obtuse or rounded at apex, not at all acuminate, coriaceous, quite veinless (except midrib), with a very narrow cartilaginous margin, dark green and shining above, pale and dull beneath, petiole short but distinct; fl. few, small, ped. about as long as cal.-tube, cymes very small, nearly sessile; cal.-tube short, limb spreading, cup-shaped, segm. broad, shallow, acute; rays of disk very indistinct; fruit about $\frac{1}{3}$ in., tipped with very small cal.-limb, black.

Forests of the upper montane zone; rather common. Fl. May; white. Endemic.

This is combined with *M. varians* in Fl. B. Ind., but seems distinct. Thwaites (l. c. 416) distinguishes C. P. 758 (from Ramboda) as a large-leafed form (*M. Thomsoni*, Thw. ms.) = var. *Thomsoni*, Triana.

Much resembles some of the small-leaved montane Eugenias; the young foliage also, as in them, is red. Wood yellow, hard, heavy.

6. **M. varians,** *Thw. Enum.* 112 (1859).
Cogn. l. c. 1164. C. P. 2927.
Fl. B. Ind. ii. 556 (in part).

A small tree, much branched, twigs quadrangular, slender; l. 2–3$\frac{1}{2}$ in., ovate-lanceolate, acute or tapering at base, more or less caudate-acuminate, acute or obtuse at base, dull not shining, rather thick, veins very obscure, petiole very short; fl. nearly sessile, in small axillary heads, peduncles very short;

cal.-limb shallow, truncate, disk-rays distinct; fruit $\frac{1}{3}$ in., capped with small cal.-rim.

Var. β, **rotundatum,** *Thw. l. c.* *M. rotundatum*, Cogn. l. c. 1164. C. P. 2959.

L. smaller, 1–2 in., obtuse at both ends, often revolute at margin.

Lower montane zone, and extending downwards to 2000 ft.; apparently rather common. Var. β at the higher elevations. Fl. April and September; pale blue or white.

Endemic (?).

I do not well understand this species, and follow Thwaites in dividing it into two varieties which seem distinct; Cogniaux separates them as species. Both often have the branchlets cylindrical, except at the summit of the internodes. The leaves turn a pale bright greenish-orange when dried.

7. **M. elegantulum,** *Thw. Enum.* 112 (1859).
C. P. 2684.
Fl. B. Ind. ii. 555.

Branchlets very slender, elongated, quadrangular; l. on very short petioles, 2–3 in., ovate-lanceolate, acute at base, with a long caudate acute apex, $\frac{1}{2}$–$\frac{3}{4}$ in. long, thin, shining above, the veins obscure; fl. very few or solitary, small, sessile, at end of filiform axillary peduncle; fruit pendulous, somewhat ovoid, purple.

Moist low country; very rare. Karawita Kande; Gilimale. Fl. May; white (?).

Endemic.

I have very scanty specimens of this plant.

8. **M. ellipticum,** *Thw. Enum.* 112 (1859).
Cogn. l. c. 1166. C. P. 3479.
Fl. B. Ind. ii. 556.

A small tree, twigs slender, quadrangular; l. oval or oblong-lanceolate, $2\frac{1}{2}$–3 in., slightly rounded at base, suddenly caudate, with a narrow obtuse tail $\frac{1}{2}$ in. long, veins inconspicuous, petiole very short; fl. on short ped., clusters small, often in axils of fallen l., sessile; cal. nearly truncate, shallow; disk-rays very obscure; fruit not seen.

Moist low country; very rare. Singhe Raja Forest only. Fl. Sept.; white.

Endemic.

I have seen none but the C. P. specimens. C. P. 1557 referred to this by Clarke, and Cogniaux I have not seen. Thwaites considered it the same as C. P. 1561 (see *M. umbellatum*).

9. **M. macrophyllum,** *Thw. Enum.* 111 (1859).
Cogn. l. c. 1140. C. P. 2865.
Fl. B. Ind. ii. 559.

A small tree, branches thickened at nodes, twigs stout, cylindrical; l. very large, 6–12 in., narrowly lanceolate-oblong, very nearly sessile, more or less cordate or rounded at base, acuminate, acute, veins indistinct; fl. on very short ped. in dense axillary sessile clusters on the old wood; disk not rayed; fruit rather over ¼ in., crowned with wide but shallow cal.-rim.

Moist low country; rather rare. Hewesse; Gangolla. Fl. white or very pale blue.

Endemic.

Very like *M. Wightii*, but the leaves much larger.

10. **M. ovoideum,** *Thw. Enum.* 112 (1859).
C. P. 2621.
Fl. B. Ind. ii. 556 (in part).

A small tree with grey bark, twigs thick, cylindrical; l. large, 2½–4 in., nearly sessile, oval-rotundate, often retuse at apex, margin often revolute, very coriaceous, pale beneath, veins inconspicuous; fl. rather large, on very short ped., fascicles sessile, crowded, axillary, on old wood; disk without rays; fruit ½–⅝ in. by ⅜ wide, ovoid, purple.

Montane zone; very rare. Ambagamuwa district; Dimbula. Fl. Feb., March.

Endemic.

Clarke in Fl. B. Ind. appears to combine the very different *M. macrocarpum* with this, in which he is followed by Cogniaux; but the former quotes for *ovoideum* C. P. 2622 (which is *Eugenia cordifolia*), and says also that it is *M. revolutum;* so that the whole is of doubtful meaning.

11. **M. revolutum,** *Thw. Enum.* 111 (1859).
Cogn. l. c. 1147. C. P. 2975.
Fl. B. Ind. ii. 560.

A small tree with thick branches, twigs stout, cylindrical; l. 2–3 in., nearly sessile, rotundate, subcordate at base, very obtuse, much revolute at sides and apex, coriaceous, somewhat bullate, lat.-veins few, coarse, rather conspicuous beneath; fl. small, ped. twice as long as cal., in rather large pedunculate panicles from axils of fallen l.; cal.-limb expanded, segm. broad, acute; disk with faint rays; fruit about ⅜ in., globose, purplish-black.

Montane zone, apparently very rare. Palagala, near Ramboda, at about 5000 ft., is the locality of the C. P. specimens. Fl. Sept.; white.

Endemic.

C. P. 751, from Ambagamuwa district, appears to be also this species, which has, doubtless, been overlooked from its foliage closely resembling several other montane trees.

12. **M. orbiculare,** *Thw. Enum.* 112 (1859).
Cogn. l. c. 1163. C. P. 3441.
Fl. B. Ind. ii. 112.

A small tree, twigs cylindrical; l. sessile or nearly so, $1\frac{1}{2}$–2 in., orbicular, often rather wider than long, subcordate at base, retuse, occasionally very obscurely acuminate, paler beneath, veins inconspicuous; fl. in dense axillary fascicles, ped. equalling cal., peduncle very short or none; disk not rayed; fruit under $\frac{1}{4}$ in.

Moist low country; very rare. Only found on Kalabowitiya Kande, Hiniduma Pattu. Fl. April; bright blue.
Endemic.

13. **M. procerum,** *Thw. Enum.* 415 (1864).
Cogn. l. c. 1141. C. P. 3347.
Fl. B. Ind. ii. 556

A moderate-sized tree, 30–40 ft., twigs cylindrical; l. very large, 6–10 in., ovate or lanceolate-ovate, rounded at base, gradually acuminate, pale beneath, petiole $\frac{3}{8}$ in., stout, channelled above; fl. (not seen) nearly sessile, with large bracts, cymes sessile; disk (in fruit) faintly rayed; fruit large, $\frac{3}{8}$ in., crowned with large erect cal.-limb.

Moist low country; rare. Kalutara; Leenakande, Pasdun Korale.
Endemic.

14. **M. cuneatum,** *Thw. Enum.* 112 (1859).
Cogn. l. c. 1162. C. P. 3528.
Fl. B. Ind. ii. 564 (*M. edule*, var. 7).

A small tree, much branched, branchlets thickened at nodes, twigs cylindrical or sub-quadrangular; l. $1\frac{1}{4}$–2 in., sessile or very shortly stalked, from obovate-oblong to almost rotundate, tapering to cuneate base, rounded at apex, coriaceous, veins invisible; fl. small, ped. shorter than cal., cymes sessile in axils on old wood, buds acutely pointed; disk without rays; fruit $\frac{1}{4}$ in.

Lower montane zone; rare. Maturata; Mattettugama. Fl. August; purplish-white.
Endemic.

15. **M. umbellatum,** *Burm. f. Fl. Ind.* 87 (1768). **Kora-kaha,** *S.* **Kaya, Kurrekaya, Pandikaya,** *T.*
Herm. Mus. 40. Burm. Thes. 76. *Samara læta*, L. Mant. ii.; Moon Cat. 11. *M. ramiflorum*, Lam. Enc. Meth. iv. 88. Thw. Enum. 111. C. P. 764, 1561, 1562.
F. B. Ind. ii. 563 (*M. edule*, vars. 1 and 2?). Burm. Thes. t. 31. Wight, Ill. t. 93 (*M. tinctorium*).

A large bush with many branches, twigs cylindrical; l. $1\frac{1}{2}$–$2\frac{1}{2}$ in., oval or ovate-oval or oblong-oval, acute (rarely rounded) at base, often slightly acuminate, obtuse at apex, dull not shining, lat. veins almost invisible (in fresh speci-

mens), the intramarginal ones joining the midrib at base and giving a slightly 3-nerved appearance, petiole under $\frac{1}{4}$ in.; fl. small, numerous, on slender ped. as long as or longer than cal., cymes umbellate, sessile or on a very short peduncle, copious, closely placed in axils of fallen l. on the old wood, buds pyriform-globular, blunt; cal. rather shallowly campanulate, puberulous, segm. broadly triangular, acute, a little shorter than tube; disk quite without or with very faint rays; pet. small, distant, reflexed; fruit $\frac{1}{4}$ in., with inconspicuous cal.-limb.

Var. β, **Thwaitesii,** *Clarke, l. c.* (*M. edule*, var. 10). *M. urceolatum*, Cogn. l. c. 1156. C. P. 387.

L. 3–4 in., acuminate, obtuse; cal. large, glabrous, tube deeply campanulate, segm. very acute, not half as long as tube.

Var. γ, **rubro-cæruleum,** *Clarke, l. c.* (*M. edule*, var. 6). *M. rubro-cæruleum*, Thw. Enum. 415. C. P. 3809.

A small tree of 30 ft.; l. tapering to base, lat. veins quite invisible; peduncle about $\frac{1}{4}$ in.; cal.-limb longer, nearly truncate.

Low country in both moist and dry regions; common. Var. β only at Haldummulla. Fl. March–September; brilliant blue (cal. red in var. γ).

Also in S. India.

A very attractive shrub when in flower, from the quantity of brilliant bosses of flowers along the whole length of the branches. Var. β looks distinct, but I suspect the enlarged cal. is really due to hypertrophy from the attacks of some insect.

There is no specimen or drawing in Hermann's Herb., so that Linnæus had only Burman's figure to go upon. This is excellent; but in the separate flower only 4 stamens are shown. Hence Linnæus's genus, *Samara*, based wholly on that figure. Burm. f.'s name was published without description; if it be set aside on that account, *M. ramiflorum*, Lam. (1796) takes its place. I do not know what relation *M. edule*, Roxb. (1795), bears to it, though Roxburgh quotes Burman's figure, and both Clarke and Cogniaux make it the same (see under No. 26).

Wood whitish, smooth, rather light. The leaves and young shoots afford a yellow dye, chiefly used for colouring mats.

16. **M. Clarkeanum,** *Cogn. Mon. Melast.* 1141 (1891).
M. jambosoides, Thw. Enum. 112 (non Wight) part. C. P. 2468.
Fl. B. Ind. ii. 560 (*M. Heyneanum*, var. *latifolia*).

A small tree, twigs elongated, cylindrical; l. large, 4–7 in., long-lanceolate, much tapering at base, acuminate, acute at apex, thin, veins fine, inconspicuous, petiole very short or none; fl. sessile or nearly so, cymes sessile, small, buds pointed; cal. shallow, truncate, disk not rayed, fruit $\frac{1}{3}$ in., yellow.

Moist country; rare. Deltota; Ambagamuwa; Maskeliya. Fl. Sept.; white.

Endemic.

Cogniaux keeps *M. Heyneanum*, Benth. (*M. jambosoides*, Wight, Ic. t. 277), of S. India, as a distinct species from our Ceylon one.

17. **M. discolor,** *Cogn. Mon. Melast.* 1149 (1891).
M. jambosoides, Thw. Enum. 112 (non Wight) part. C. P. 1555.
Fl. B. Ind. ii. 560 (*M. Heyneanum*, var. *angustifolia*).

A small tree, branchlets elongated, thickened at nodes, twigs cylindrical; l. large, 5–7 in., narrowly linear-lanceolate, tapering to base, very long-acuminate, acute at apex, thick, midrib very prominent beneath, lat. veins almost invisible (when dried, upper surface rich brown, under surface light golden greenish-yellow), petiole very short, stout; fl. on very short ped., cymes sessile, buds pointed; cal. nearly truncate; pet. reflexed; fruit nearly $\frac{1}{3}$ in., yellow.

Moist low country; very rare. Ambagamuwa; Palabadala, Kuruwita Korale. Fl. Sept.; white with pink calyx.

Also in S. India.

I have seen only leaves of this, but there are good drawings of the flowers and fruit. It is, though very different in appearance *when dry*, probably not distinct from *M. Clarkeanum;* but I have seen no fresh specimens.

18. **M. fuscescens.** *Thw. Enum.* 111 (1859).
Cogn. l. c. 1140. C. P. 287.
Fl. B. Ind. ii. 262.

A bush, branchlets slender, twigs cylindrical or sub-quadrangular; l. $2\frac{1}{4}$–$2\frac{3}{4}$ in., nearly sessile, ovate, acute at base, suddenly caudate-acuminate with a tail $\frac{1}{2}$–$\frac{3}{4}$ in. long, sub-acute at apex, membranous, shining above, veins inconspicuous; fl. few, ped. short, slender, with two bractlets at summit, cymes sessile, very small; cal.-segm. acute, disk not rayed; fruit large, over $\frac{3}{8}$ in.

Moist low country; rare. Kukul Korale, abundant; Lihinigalla, Pasdun Korale. Fl. Aug., Sept.

Endemic.

Clarke and Cogniaux give C. P. 2926 for this, which I have not seen.

19. **M. rostratum,** *Thw. Enum.* 111 (1859). **Kurétiya, Hin-kurétiya,** *S.*
Cogn. l. c. 1160. C. P. 1560.
Fl. B. Ind. ii. 262.

A small tree, branchlets very numerous, ascending, twigs compressed or sub-quadrangular, very slender; l. small, $1\frac{1}{2}$–$2\frac{1}{2}$ in., lanceolate or oval-lanceolate, tapering to base, caudate-acuminate, with a tail $\frac{1}{2}$–$\frac{3}{4}$ in. long, obtuse at apex, veins faintly marked, petiole $\frac{1}{8}$–$\frac{1}{6}$ in.; fl. very small, ped. at least 3

times as long as cal., slender, umbels on a short stout peduncle in axils of both past and present l., buds pointed; cal. shallow, nearly truncate, disk distinctly rayed; fruit small, $\frac{1}{6}$ in., globose.

Lower montane zone 3000–4000 ft.; rather common. Hantane; Deltota; Medamahanuwara. Fl. May; very pale blue.

Endemic.

A fairly distinct species by its very small flowers in simple stalked umbels. Wood yellow, hard, smooth. I have it from the Pasdun Korale under the name of 'Gal-pinibaru.'

20. **M. angustifolium,** *Wight, Ill.* i. 215 (1840).
Cogn. l. c. 1157. Thw. Enum. 111. C. P. 1556, 3346.
Fl. B. Ind. ii. 262. Wight, Ic. t. 276.

A small shrub, 6–8 ft., with many erect slender branches, twigs sub-quadrangular; l. 2–3 in., linear or lanceolate-linear, almost sessile, much tapering to base, caudate-acuminate or rounded at apex, stiff, shining above, paler and dull beneath, midrib depressed on upper surface, lat. veins invisible; fl. on slender ped., 2 or 3 times as long as cal., umbellate or paniculate, peduncles under $\frac{1}{4}$ in., disk without rays; fruit small, about $\frac{1}{6}$ in., black-purple.

Low country in the beds of streams and banks of rivers up to 2000 ft.; rather common. Sigiri (Gardner); Uma-oya; Ambagamuwa; Sabaragamuwa; Labúgama; Knuckles (Ferguson). Fl. Feb.–July; bright purplish-blue.

Also in Southern India.

C. P. 1556 (from Uma-oya) has obtuse non-acuminate l. and considerably larger fl. in a larger compound pedunculate inflorescence.

21. **M. phyllanthifolium,** *Thw. ex Triana in Trans. Linn. Soc.* xxviii. 159 (name only) (1871).
Cogn. l. c. 1165. C. P. 3901.
Fl. B. Ind. ii. 563.

An erect stiff shrub, with numerous erect nodular branches, twigs cylindrical; l. very numerous, closely placed, small, under $\frac{1}{2}$ in., nearly sessile, erect, rigid, linear-oblong, tapering to base, rounded at apex, margin somewhat recurved, lat. veins invisible; fl. nearly sessile, very small, 2 or 3 together at summit of very short peduncle, cal.-limb spreading, segm. acute; fruit small, scarcely $\frac{1}{6}$ in., crowned with conspicuous cal.-limb.

Upper montane zone; very rare. Bogawantalawa at about 5000 ft.; first collected in 1866. Fl. March.

Endemic.

Quite unlike the rest of the genus, with the habit of a shrubby *Phyllanthus*.

22. **M. rhinophyllum,** *Thw. Enum.* 110 (1859).
Cogn. l. c. 1166. C. P. 2928.
Fl. B. Ind. ii. 562.

A small tree, twigs slender, quadrangular; l. sessile or very nearly, 3–4 in., ovate-oval, very acute at base, long-acuminate, obtuse at apex, dull not shining, paler beneath, veins invisible; fl. numerous, ped. twice as long as cal., slender, in rather large umbellate-corymbose cymes on short flattened peduncles; cal.-segm. broad, shallow; disk with winged rays; fruit ¼ in., purplish-black.

Moist low country to 3000 ft.; rather common. Ratnapura; Alagala; Hantane. Fl. April; pale violet-blue.

Endemic.

Clarke, followed by Cogniaux, quotes for this C. P. 2572 in error; that number is an *Oberonia*.

23. **M. leucanthum,** *Thw. Enum.* 110.
M. edule, var., Cogn. Mon. 1156. C. P. 1559.
Fl. B. Ind. ii. 564 (*M. edule*, var. *δ*).

A small tree, twigs obscurely quadrangular; l. 1½–2½ in., broadly oval to rotundate, acute at base, shortly acuminate, obtuse at apex, lat. veins rather conspicuous beneath, petiole very short; ped. as long as or longer than cal., divaricate, cymes racemose-paniculate, lax; cal.-tube campanulate, segm. short, erect, obtuse; pet. clawed, somewhat lacerate, strongly reflexed, disk-rays distinctly winged; fruit small, under ¼ in., crowned with large cal.-limb.

Lower montane zone; rather rare. Hantane; Watagoda; Dimbula. Fl. April; pure white.

Endemic.

24. **M. macrocarpum,** *Thw. Enum.* 110 (1859).
M. ovoideum (non. Thw.), Cogn. l. c. 1147. C. P. 2798.
Fl. B. Ind. ii. 556 (with *M. ovoideum*).

A small tree with straight erect trunk, branches thickened at nodes, twigs stout, cylindrical; l. rather large, 3–4 in., rotundate, acute at base, obtuse or rounded at apex, very thick and coriaceous, margin slightly revolute, pale beneath, lat. veins quite invisible, petiole very short and thick; fl. (not seen) from large axillary bosses on the old wood, ped. short; fruit large, ¾ in. or rather more, globose, suddenly contracted at summit into a short neck, crowned by truncate cal.-limb., disk conspicuously winged.

Moist region; very rare. I have only seen the C. P. specimens from Ambagamuwa, which are in fruit.

Endemic.

A very distinct species, curiously confused with *M. ovoideum*.

25. **M. lævigatum,** *Bl. Mus. Bot.* i. 358 (1851).
M. sylvaticum, Thw. Enum. 110. C. P. 1558, 1567, 3302.
Fl. B. Ind. ii. 561.

A small tree, twigs cylindrical; l. 2½–5 in., sub-sessile, broadly oval or ovate-oval, tapering to base, rather abruptly acuminate, obtuse at apex, shining on both sides, pale beneath, coriaceous, veins inconspicuous; fl. large (for genus), on very short thick ped. or nearly sessile, cymes small, crowded in axils of fallen l., peduncles usually very short, buds large, pointed; cal.-limb cup-shaped, truncate, mealy-pubescent outside, segm. obscure, disk-rays prominently winged; pet. broader than long, very obtuse, recurved; fruit about ¼ in., often somewhat ovoid, crowned with truncate cal.-limb, dark purple.

Forests from 2000–4000 ft. or higher; common. Fl. Jan.–April; deep violet-blue, cal. white or pink.

Also in Malay Peninsula and Islands.

Known from *M. grande* by its larger, nearly sessile flowers. Cogniaux (l. c. 1150) keeps up Thwaites' *M. sylvaticum* as distinct from *M. lævigatum.* At the higher elevations the leaves are smaller (1½–2½ in.) and more coriaceous.

26. **M. grande,** *Retz. Obs. Bot.* iv. 26 (1786). **Dodan-wenna, Dedi-kaha,** *S.*

M. edule, var. β, Thw. Enum. 110. Cogn. l. c. 1153. C. P. 3442. Fl. B. Ind. ii. 557.

A large shrub or small tree with smooth grey bark, twigs cylindrical; l. large, 4–6 in., broadly oval or ovate-oval, acute at base, caudate-acuminate, often twisted, obtuse at apex, thick, dark green above, veins inconspicuous, petiole ¼–½ in.; ped. about as long as cal.; cymes large, often 2 in., lax, paniculate, spreading, from axils of present and fallen l., peduncles ½–¾ in., flattened, buds globose; cal.-limb truncate, segm. obscure; disk-rays winged; fruit ⅜ in., crowned with small erect cal.-limb, dark purple, rather juicy.

Var. β, **ovatum,** *Clarke* (*M. edule*, var. 4). *M. edule*, Roxb., Moon Cat. 32; Thw. Enum. 110 (vars. *α* and γ). C. P. 1563, 1566.

L. smaller, 2½–4 in., often somewhat oblong, less acute at base and less acuminate; ped. a little longer, cymes smaller, umbellate-corymbose, disk-rays usually winged (but sometimes not or even faintly marked), fruit smaller, ¼ in.

Moist region in the low country, especially near the coast; rather common. Fl. Sept.–April; pale purplish-blue; var. β, darker.

Also in India and Malaya.

I follow Thwaites in combining these. The type of Retzius' species (from Kœnig) in the British Museum is identical with C. P. 3442. As to var. β, it may be Roxburgh's *M. edule;* but his figure (Cor. Pl. t. 82) is unsatisfactory, and the description insufficient, and the name appears to be now very vaguely applied. In Fl. B. Ind., for instance, all the 'enormous mass' of specimens in Kew Herb. that 'appear difficult to

separate' from it (including many fairly distinct species) are placed under the name. On the whole, it seems safer not to employ it for any Ceylon species. *M. Royenii*, Bl. Mus. Bot. i. 360, from Ceylon, probably comes here.

Wood hard, strong, and rather heavy. The fruit is eaten when cooked. The rays of the disk are sometimes quite inconspicuous in this species.

27. **M. capitellatum,** *L. Sp. Pl.* 349 (1753). **Wéli-kaha, Dodan-kaha,** *S.* **Kattikaya, Venkalikaya, Pavaddai-kaya,** *T.* [PLATE XLI.)

Herm. Mus. 4. Burm. Thes. 76 Fl. Zeyl. n. 136. Moon Cat. 32. Thw. Enum. 110. Cogn. l. c. 1142. C. P. 1564.

Fl. B. Ind. ii. 564 (*M. edule*, vars. 3 and 5). Burm. Thes. t. 30. Bedd. Fl. Sylv. t. 206, fig. A.

A shrub with brown bark, twigs cylindrical; l. very shortly stalked, oblong or slightly rhomboid-oval, acute at base, obtuse at apex, sometimes slightly acuminate, thick, shining on both sides, bright light green, paler beneath, lat. veins inconspicuous, the intramarginal one joining the midrib at base and making it distinctly 3-nerved (very obvious when dry); fl. rather large, quite sessile, few together in small heads at ends of stiff peduncles $\frac{1}{4}$–$1\frac{1}{2}$ in. long, from axils of present and fallen l.; cal. shallow, segm. conspicuous, fleshy, erect, bluntly pointed, disk-rays strongly winged; fruit $\frac{3}{8}$ in. or a little more, crowned with large cal.-segm., black purple when quite ripe.

Low country up to 1000 ft. in both moist and dry regions; common, especially in the northern forests. Fl. May, June; violet-blue.

Endemic. (?)

This is the original type of the genus, the only species described by Linnæus. *M. tinctorium*, Kœn. in Willd. Sp. Pl. ii. 347, is referred, as a variety, to this by Blume, who has seen Kœnig's specimen which was collected at Galle. Clarke quotes for this *Samara læta*, Moon, which belongs to *M. umbellatum* (No. 15).

One of our best-marked species, abundantly distinct from *M. edule*, Roxb. (as a variety of which it is considered in Fl. B. Ind.), and easily recognised by the foliage alone. Wood hard, strong. The leaves turn orange-yellow when dried; they afford a yellow dye.

LIV.—LYTHRACEÆ.

TREES, shrubs, or herbs, l. opp., entire, no stip., fl. regular, bisexual, variously arranged; cal. persistent, free or slightly adnate to base of ov. (in *Axinandra* completely adnate), segm. 3–6; pet. 3–6 or 0; stam. double the number (rarely equal to number) of pet., or indef., inserted on cal.-tube; ov.

superior (in *Axinandra* inferior), 1–6-celled, with numerous (1 in *Axinandra*) ovules in each cell, style simple; fruit a capsule, often included in cal.-tube, variously dehiscent, rarely indehiscent; seeds numerous, sometimes winged, embryo straight, rarely bent, no endosperm.

Herbs . . . . 1. AMMANNIA.
Shrubs or trees.
  Stam. 12.
    Capsule irregularly dehiscent . . . . . 2. WOODFORDIA.
    Capsule opening by a cap . . . . 3. PEMPHIS.
  Stam. 8 . . . . 4. LAWSONIA.
  Stam. indef.
    Fruit a 6-valved capsule . . . . . 5. LAGERSTRŒMIA.
    Fruit fleshy, indehiscent . . . . . 6. SONNERATIA.
  Stam. 10 (*Anomalous Genus:* ov. inferior). . 7. AXINANDRA.

Most of our 15 species are low-country plants; indeed, *Woodfordia* is the only hill species. The *Ammannias* are paddy-field weeds. *Lawsonia* is confined to the dry region, and *Lagerstrœmia* and the anomalous *Axinandra* to the moist. The *Sonneratias* inhabit mangrove-swamps, and *Pemphis* is a seashore plant.

1. AMMANNIA, *L.*

Annual herbs, l. opp. (rarely alt.) or whorled, fl. small, axillary; cal. more or less deeply campanulate, segm. 3–5, often with intermediate teeth; pet. 3–5 or 0, inserted between cal.-segm.; stam. 2, 4, 5, or 8; ov. superior, 1–5-celled, the septa often becoming absorbed, ovules very numerous on axile placentas; capsule membranous, enclosed in (though free from) persistent cal., dehiscing by valves or irregularly circumscissile, seeds minute, very numerous.—Sp. 30; 18 in *Fl. B. Ind.*

Fl. solitary in axils (*Rotala*).
  Stam. 4 . . . . 1. A. PEPLOIDES.
  Stam. 3 . . . . 2. A. ROTALA.
  Stam. 5 . . . . 3. A. PENTANDRA.
Fl. in axillary cymes or clusters.
  Stam. 4.
    L. oblong-linear, obtuse . . . . . . 4. A. BACCIFERA.
    L. oval, cordate at base . . . . . . 5. A. CORDATA.
    L. spathulate-oval, tapering to base . . . 6. A. LANCEOLATA.
  Stam. 8 . . . . 7. A. OCTANDRA.

1. **A. peploides,** *Spreng. Syst. Veg.* i. 444 (1825).
Ameletia indica, DC., Thw. Enum. 122. C. P. 1546.
Fl. B. Ind. ii. 566. Wight, Ic. t. 257.

Stems 6–12 in., usually decumbent at base and rooting at the lower nodes, with numerous ascending quadrangular

branches ; l. opp., on main stem and branches $\frac{1}{2}$–$\frac{3}{4}$ in. but on floriferous branchlets very much smaller and bract-like, nearly sessile, rounded at apex, spathulate-oval, narrowed at base, glabrous, veins prominent beneath ; fl. very small, solitary in axils of the small l., which are more or less approximated so that the branchlets look like spikes, bracts 2, linear, scarious ; cal.-tube tubular, campanulate, glabrous, segm. 4, narrowly triangular, very acute, intermediate teeth minute ; pet. 4, very small or 0; stam. 4 ; capsule ovoid, somewhat compressed, opening by 2 valves from the summit ; seeds very minute, oblong, chestnut brown.

Low country up to 3000 ft., in paddy-fields, tanks, and wet places; very common. Fl. all the year.
Throughout India and Malaya, China, Persia.
Has somewhat the habit and appearance of an Amarantacea.

2. **A. Rotala,** *F. Muell. Fragm.* iii. 108 (1863).
Rotala verticillaris, L., Thw. Enum. 122. C. P. 1547.
Fl. B. Ind. ii. 567. Wight, Ic. t. 260, A (*R. verticillaris*).

Stems 3–6 in., often procumbent and rooting at very base, then erect, slightly branched, glabrous, striate ; l. in whorls of 4–8, about $\frac{1}{4}$ in., narrowly linear, truncate or bifid at apex, 1-nerved ; fl. sessile, solitary, whorled ; cal.-tube tubular, very thin, segm. 3, short, broadly triangular, acute ; pet. 3 or 0; stam. 3; ov. 3-celled ; capsule ovoid, completely 3-valved.

Moist low country ; rather common. Fl. all the year.
Also in India, Australia, Trop. Africa.
Thwaites says this is 'very abundant.' I have not found it so in my experience, but it is readily overlooked.

3. **A. pentandra,** *Roxb. Fl. Ind.* i. 425 (1832).
A. debilis, Ait., Moon Cat. 11. Thw. Enum. 122. C. P. 1548.
Fl. B. Ind. ii. 568. Wight, Ic. t. 260, A (*Rotala Roxburghiana*).

Stem stout, quadrangular, rooting at the base, 6–12 in.; with numerous horizontal branches ; l. opp., on the stem $\frac{1}{2}$ in., but on the branches much smaller and bract-like, sessile, oblong, subacute ; fl. sessile, solitary, bractlets subulate ; cal. shortly campanulate, segm. 5, triangular, very acute, intermediate teeth long, subulate; pet. 5 ; stam. 5 ; capsule depressed-globular, completely 3-valved ; seeds hemispherical.

Low country in wet places ; common. Fl. all the year.
Throughout the Tropics of the Old World.

4. **A. baccifera,** *L. Sp. Pl.* 120 (1753).
Moon Cat. 11. *A. indica*, DC., Thw. Enum. 121. C. P. 1542
Fl. B. Ind. ii. 569. Blume, Mus. Bot. ii. t. 46, A (*A. indica*).

Stems 8–24 in., erect, quadrangular, glabrous, with numerous horizontal or ascending branches from the very base, gradually becoming shorter upwards so as to give the plant a pyramidal form; l. opp. (rarely alternate), on main stem 1–1¾ in. but smaller on branches, sessile, oblong-linear, much tapering to base, obtuse at apex, flaccid; fl. shortly pedicellate, in small loose cymes, forming whorls in the axils; cal. shortly campanulate, segm. 4, broad, acute, intermediate teeth slightly marked; pet. 0; stam. 4 (or 2); capsule exceeding cal., depressed-globose, red, irregularly circumscissile; seeds plane-convex, the plane face excavated.

Moist sandy ground in the low country, especially in the dry region and near the coast; common. Fl. Jan.–April.

Throughout the Tropics of the Old World.

5. **A. cordata,** *Wight and Arn. Prod.* 304 (1834).
A. salicifolia, var. *β*, Thw. Enum. 121. C. P. 3296.
Fl. B. Ind. ii. 570.

Stem 6–12 in., quadrangular, glabrous, branched from the base; l. ¾–1¼ in., sessile, ovate-oval, cordate and somewhat amplexicaul at base, with a narrow cartilaginous margin; fl. very shortly pedicellate, in small opp. clusters; cal.-tube campanulate, segm. 4, large, broadly triangular, acute, intermediate teeth conspicuous; pet. and stam. 4; capsule depressed-globose, almost covered by the inflexed cal.-segm.

Dry country; rare. Batticaloa; Haragama. Fl. March–June.

Also in India.

6. **A. lanceolata,** *Heyne in Wall. Cat.* 2106 (1828).
A. salicifolia, Thw. Enum. 121 (non Monti). C. P. 2796.
Fl. B. Ind. ii. 570.

Stem 3–9 in., slightly branched, quadrangular; l. ½–1 in., sessile, spathulate-oval, tapering to base; pet. 0; otherwise as in *A. cordata.*

Low country; rather common. Kalutara; Uma-oya; Batticaloa. Fl. March, April.

Also in Southern India.

This is described in Fl. B. Ind. as having petals considerably exceeding the cal. Our specimens seem to have none.

7. **A. octandra,** *L. f. Supp. Pl.* 127 (1781).
Moon Cat. 11. Thw. Enum. 121. C. P. 2797.
Fl. B. Ind. ii. 571. Roxb. Cor. Pl. t. 133.

Stem 1–2 ft., erect, stiff, quadrangular, with numerous and ascending branches; l. on main stem 1½–2½ in. but smaller on the branches, sessile, linear-lanceolate, auriculate at base, much tapering to acute apex; fl. rather large, on very

short ped., in threes at end of short scabrous peduncles; cal. long-campanulate, quadrangular, the angles winged, segm. 4, short; pet. 4, rotundate, spreading; stam. 8; capsule broadly ovoid, enclosed in persistent 4-winged cal.

Dry region; rather common. Jaffna (Moon); Dambulla; Matale; near Kurunegala. Fl. March, April; bright pink.

Also in S. India and Malaya.

Much the most showy of our species.

2. **WOODFORDIA**,* *Salisb.*

A spreading shrub, l. opp., fl. in copious axillary paniculate cymes; cal.-tube widely tubular, oblique at mouth, segm. 6; pet. very small, 6, inserted between cal.-segm.; stam. 12, inserted at base of cal.-tube; ov. superior, enclosed in but free from the campanulate base of cal.-tube, 2-celled, with very numerous ovules; fruit a membranous capsule included in cal.-tube, with very numerous seeds.—Monotypic.

W. floribunda, *Salisb. Parad. Lond.* t. 42 (1806). **Malitta,** *S.*
Grislea tomentosa, Willd., Moon Cat. 31. Thw. Enum. 122. C. P. 1552. Fl. B. Ind. ii. 572. Roxb. Cor. Pl. t. 31. Bot. Mag. t. 1906.

A straggling shrub, with many long arching branches, bark cinnamon-brown, shredding off in fibres, shoots covered with fine white pubescence, cylindrical; l. sessile, 3–4 in., narrowly ovate-lanceolate, cordate at base, tapering to acute apex, entire, finely velvety on both sides, veins pellucid, prominent beneath, the lat. ones uniting within the margin, paler or whitish beneath, dotted with very minute orange glands; fl. on pubescent ped., arranged in numerous short, divaricate, cymose panicles from the axils of fallen l. on the old wood, and rarely from those of present l.; cal. over $\frac{1}{2}$ in., with a small campanulate base, and a long, slightly curved, somewhat inflated funnel-shaped tube, pubescent, red, segm. very short, triangular, acute; pet. very small, about as long as cal.-segm.; stam. declinate, much exserted, persistent; capsule enclosed in persistent cal.-tube which becomes vertically split, about $\frac{3}{8}$ in., pericarp thin, membranous, irregularly dehiscent; seeds very numerous, oblong-wedge-shaped, brown, smooth.

Open sunny places in the lower montane zone; rare. Maturata; Uva patanas locally abundant, as on the Badulla road about Wilson's bungalow, Bandarawella, &c., but scarcely in the Central Prov. mountains. Fl. March, April; bright brick-red.

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* In honour of E. J. A. Woodford, Esq., a great cultivator of rare plants in London in the early part of this century.

Also in India, China, Trop. Africa, and Madagascar.
The stamens are trimorphic as in *Lythrum.*

Nesæa triflora, Kunth., is C. P. 1541, and recorded in Thw. Enum. 417. The specimens were collected by Walker, and were no doubt introduced. The plant is a native of Mauritius.

3. **PEMPHIS,** *Forst.*

A maritime shrub, l. opp., fleshy; fl. axillary, solitary; cal.-tube campanulate, segm. 6, short, with intermediate teeth; pet. 6, inserted between cal.-segm., spreading; stam. 12, inserted near the base of cal.-tube; ov. superior, 3-celled with numerous ovules, stigma large, capitate; fruit a capsule, enclosed for $\frac{3}{4}$ of its length in cal.-tube, pericarp thin in enclosed portion, thicker in projecting blunt summit, which separates as a cap; seeds large, numerous, cuneate, angular, smooth.—Monotypic.

P. acidula, *Forst. Gen.* 67 (1776).
Lythrum Pemphis, L. f. Suppl. Pl. 249. Moon Cat. 37. Thw. Enum. 122. C. P. 1553.
Fl. B. Ind. ii. 573. Wight, Ic. t. 1996 (*Maclellandia Griffithiana*).

A shrub, 3–5 ft. high, with very numerous ascending virgate branches densely clothed with fine white pubescence, especially round the nodes; l. small, numerous, sessile, often very closely placed, $\frac{1}{2}$–$1\frac{1}{2}$ in., readily disarticulating, lanceolate-oblong, acute at base, obtuse at apex, densely silvery-pubescent on both sides, fleshy; fl. on pubescent ped. as long as cal., solitary, axillary; cal. 12-ribbed, densely pubescent, segm. very short, triangular, acute, intermediate teeth similar but smaller; pet. rather large, as long as cal., oblong, undulate; capsule $\frac{1}{4}$ in. long, tipped by persistent style.

Seacoast; rather common. Jaffna; Trincomalie; Galle; Dondra Head; Kalpitiya; Chilaw. Fl. July, August; pink.
Tropical shores of the Old World generally.
First collected by Kœnig.

4. **LAWSONIA,*** *L.*

A shrub, l. opp. entire; fl. small, in large terminal panicles; cal.-tube very short, segm. 4; pet. 4, inserted at summit of cal.-tube; stam. 8, inserted on cal.-tube in pairs; ov. superior, 4-celled, ovules numerous, style simple; fruit a small capsule, with thin pericarp, dehiscing irregularly; seeds numerous, closely packed, smooth, angular.—Monotypic.

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* Commemorates Dr. Isaac Lawson, a Scotch friend of Linnæus.

L. alba, *Lam. Enc. Meth.* iii. 106 (1789). **Marutonti,** *T.*
Burm. Thes. 142. Fl. Zeyl. nn. 134 and 135. *L. spinosa* and *L. inermis*, L. Sp. L. 349; Moon Cat. 31. Thw. Enum. 122. C. P. 1551.
Fl. B. Ind ii. 573. Wight, Ill. t. 87.

A much-branched shrub, the lat. branchlets often ending in a sharp spinous point; l. small, $\frac{1}{2}$–$1\frac{1}{2}$ in., very nearly sessile, oval or lanceolate, tapering to base, acute or obtuse at apex, often apiculate, entire, glabrous; fl. numerous, small, under $\frac{1}{2}$ in., ped. slender, glabrous, pink, arranged in rather long axillary and terminal panicles, the whole forming a large pyramidal inflor.; cal. glabrous, tube very short, segm. oval, acute; pet. oblong, undulate, spreading or reflexed; stam. spreading in pairs; capsule not $\frac{1}{4}$ in., globose, supported on persistent cal., tipped with style.

Dry and desert regions, especially near the seacoast; rather rare. Batticaloa; near Chilaw; Mannar; Jaffna, abundant by the salt lakes. In the moist region cultivated only. Fl. Feb., March; pet. cream-yellow, sep. pinkish; very sweet-scented.

Also in Western India, Kabul, and Persia, and much cultivated elsewhere.

Called 'Tree-Mignonette' in cultivation in Colombo. This is the 'Henna;' the leaves are used for staining the finger-nails and teeth, and also for applying to the head when bathing.

5. LAGERSTRŒMIA, *L.*

Large tree; l. opp., entire; fl. very large, in terminal panicles; cal.-tube campanulate, fleshy; segm. 6, shorter than tube, intermediate teeth very small; pet. 6, clawed, inserted at brim of cal.-tube; stam. very numerous, in several rows inserted near base of cal.-tube, connective dilated; ov. superior, 6-celled, with numerous ovules, style simple; fruit a woody capsule, surrounded at base by persistent, semi-woody cal., loculicidally dehiscent into 6 valves; seeds numerous, flat, winged at one end.—Sp. 18; 12 in *Fl. B. Ind.*

L. Flos-reginæ, *Retz. Obs. Bot.* v. 25 (1789). **Muruta,** *S.*
Herm. Mus. 61. Burm. Thes. 137. Moon Cat. 42. Thw. Enum. 122. C. P. 1554.
Fl. B. Ind. ii. 577. Wight, Ic. t. 413. Bedd. Fl. Sylv. t. 29.

A large tree with wide-spreading branches, bark pale, rather smooth, flaking off in irregular pieces; l. large, 6–10 in., oval or oblong-lanceolate, rounded at base, subacute, entire but somewhat repand at margin, perfectly glabrous on both sides, paler beneath, with lat. veins very prominent, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stout; fl. very large, 2–4 in., on very stout, pubescent

spreading ped. thickened upwards and articulated below the middle, where are 2 small opp. bractlets, panicle large, 1½–2 ft., stout, erect, with spreading branches, bracts small, buds pyriform, truncate; cal.-tube with 12 vertical grooves, mealy-pubescent, segm. long-triangular, acute, spreading, rather shorter than tube; pet. 1–1¾ in., rotundate, leaf-like, with a stout petiole-like claw, veiny, much undulate and crumpled, spreading, margin slightly erose; fil. under 1 in.; ov. glabrous; fruit ¾ in., broadly ovoid, about ⅓ concealed by persistent, cup-like cal., very hard and woody, apiculate, smooth, valves remaining connected by their bases; seed with wing ½ in., glabrous, pale brown.

Moist low country up to 2000 ft., especially by rivers and streams; rather common. Fl. April–July; deep or light mauve, or bright rose-coloured.

Also in India, Malaya, and China, but often cultivated.

A magnificent tree when in full flower; it is deciduous and bare of leaves for a very short time. Wood light brownish-red, hard, not heavy, very useful.

Though Hermann knew this tree, he preserved no specimen in his herbarium; hence it was left unnamed by Linnæus among the 'Barbaræ' (Fl. Zeyl. n. 533).

6. SONNERATIA,* *L. f.*

Shrubs or trees; l. opp., entire, thick; fl. large, solitary or 3, terminal; cal. coriaceous, tube campanulate, slightly adnate to base of ov., segm. 4 or 6; pet. 6 or 0; stam. very numerous, inserted within rim of cal.-tube, fil. very long; ov. almost entirely superior, many-celled, with numerous ovules in each cell, style long, stigma capitate; fruit large, hard-fleshy, indehiscent, supported on persistent cal., many-seeded; seeds small, angular, embryo bent.—Sp. 5; 3 in *Fl. B. Ind.*

Pet. 0.
  Tree; cal.-segm. 4 . . . . 1. S. APETALA.
  Shrub; cal.-segm. 6 . . . . 2. S. ALBA.
Pet. 6 . . . . 3. S. ACIDA.

1. **S. apetala,** *Ham. in Symes, Emb. Ava*, iii. 313 (1800).
Trim. in Journ. Bot. xxvii. 163.
Fl. B. Ind. ii. 579 (not given for Ceylon). Symes, Emb. Ava, t. 25.

An erect tree, attaining 40 ft., with slender drooping branches; l. 2½–4½ in., narrowly oblong-lanceolate, much

* Commemorates P. Sonnerat, who figures *S. acida* in his 'Voyage à la Nouv. Guinée,' 1776.

tapering at base into short petiole, obtuse at apex, glabrous, rather thick; fl. solitary, terminal, large, articulated on rather long ped.; cal.-tube cup-shaped, segm. 4, longer than tube, oblong-ovate, acute, deflexed; pet. 0; fruit about $\frac{3}{4}$ in. wide, depressed-globular, tipped with style, smooth, white.

Mangrove swamps; very rare. Only found at Koddiyar, near Trincomalie, Aug. 1885, in fruit. Fl. June (?).

Also in Bengal and Burma.

This possesses upright root-processes like *S. acida.*

2. **S. alba,** *Smith in Rees Cyclop.* xxxiii. (1816).
Trim. in Journ. Bot. xxiii. 171.
Fl. B. Ind. ii. 580 (not given for Ceylon). Rumph. Herb. Amb. iii. t. 73.

A bush or small tree, with smooth grey bark, twigs cylindrical, marked with prominent leaf-scars; l. 3–4 in., oval-rotundate, slightly tapering at base, rounded at apex, very thick and fleshy, petiole very short; fl. large, on very short thick ped., buds 6-angled, pointed; cal.-tube with 6 prominent ridges extending from between the segm. to the base, segm. 6, narrowly lanceolate, acute, longer than tube; pet. 0; style $1\frac{1}{2}$–2 in., stigma large; fruit supported on the much-enlarged cal. which forms a cup round the base with spreading segm., turbinate, about $1\frac{3}{4}$ in. wide, much depressed, flat on top, with the apiculate short style-base in the centre.

Mangrove swamps; very rare. Only found as yet at Chilaw, where it was first collected by Mr. Nevill in 1881. Fl. Nov.; filaments white.

Also in Malay Peninsula and Islands, Tropical Australia and Africa, but not in Peninsular India.

3. **S. acida,** *L. f. Supp. Pl.* 252 (1781). **Kirilla,** *S.* **Kinnai,** *T.*
Thw. Enum. 123. C. P. 1595.
Fl. B. Ind. ii. 579. Wight, Ic. t. 340.

A shrub or small tree, twigs quadrangular; l. nearly sessile, $2\frac{1}{4}$–3 in., oblong-oval or roundish, tapering to base, obtuse, sometimes apiculate at apex, slightly fleshy; fl. large, 3 in. long, terminal, solitary, on very short thick ped., buds not ribbed, blunt but apiculate at apex; cal.-tube quite without ribs, segm. 6, lanceolate, acute, longer than tube; pet. 6, linear, about 1 in., rather longer than cal.-segm., persistent; stam. about 2 in., erect; style considerably exceeding stam.; fruit broadly ovoid or subglobular, supported on enlarged cal. which forms a shallow cup, about $1\frac{3}{4}$ in. wide, rounded and slightly depressed on top, with the persistent tapering style-base forming a point 1 in. long in the centre.

Tidal estuaries with the mangroves; rather common. Chilaw; Negombo; Panadure; Kalutara. Fl. Sept.; dark rose-red.

Also in Bengal, Burma, Siam, Java.

Wood white, soft, light, but fine-grained.

The curious erect root-branches are figured by Karsten in his 'Mangrove Vegetation,' t. 10, f. 139; they were first described by Rumph (Herb. Amb. iii. 112). As they attain 18 in. to 3 ft. in height, and 3 in. in diameter, and have a soft, firm, even texture, they form a fine substitute for cork, and are cut into slices and used for entomologists' boxes and other purposes. Their wood is very much lighter than that of the stem. (See Dr. Templeton, of Ceylon, in Trans. Ent. Soc. iii. 302.)

7. **AXINANDRA,** *Thw.*

A tree; l. opp., entire; fl. very small in short racemes; cal.-tube shallowly campanulate, completely adnate to ov., limb spreading, segm. 5; pet. 5, connate into a deciduous cap (calyptra); stam. 10, inserted in two rows at mouth of cal.-tube, fil. very short, dilated, anth. with a very large connective much produced behind; ov. *completely inferior*, 6-celled, with 1 ovule in each cell, style very short; fruit a woody capsule, the lower half fused with enlarged cal.-tube, loculicidally dehiscent in the upper part by 2–4 valves; seeds oblong, much compressed, with a long wing at upper end.—Sp. 5; 2 in *Fl. B. Ind.*, but none in Peninsular India.

This anomalous genus is included by Baillon in *Melastomaceæ* (*Memecyleæ*), and he is followed by Cogniaux. It has points of alliance also with *Rhizophoraceæ* (*Legnotideæ*).

A. zeylanica, *Thw. in Kew Journ. Bot.* vi. 66 (1854). **Kékiriwara,** *S.*

Cogn. Mon. Melast. 1113. Thw. Enum. 122. C. P. 2668.
Fl. B. Ind. ii. 581. Kew Journ. Bot. vi. t. Ic. Bedd. Fl. Sylv. t. 207.

A tree reaching a large size, but usually about 30 ft., with a very straight trunk and numerous short drooping branches almost to the base, bark smooth, pale brown, branchlets thickened at nodes, nearly cylindrical, twigs with 4 stipular wings broad and leafy at the summit of each internode decurrent and gradually narrowing to base of internode which is quite cylindrical; l. large, 7–10 in., on a very short stout petiole, lanceolate- or ovate-oblong, subcordate at base, acuminate, acute, rather thick and coriaceous, glabrous, dark green above, paler beneath, veins very strongly marked, pellucid, depressed above, prominent beneath, lat. ones very numerous, uniting with a strong intramarginal one at a short distance from the edge; fl. very small, ped. about as long as cal., in lax, slender, stalked axillary and terminal racemes shorter than l. and sometimes paniculate with opposite divaricate branches, bracts linear, as long as ped.; cal. gla-

brous, segm. broadly triangular, acute; pet. connate by their tips and falling on expansion of fl.; stam. erect, anth. almost sessile; capsule about 1 in., ovoid, woody, blackish-brown; seed with oblong obtuse wing, nearly 1 in.

Moist low country in forest below 1500 ft.; rare. Raitunwelle; Ambagamuwa (Thwaites); Udagama (Ferguson); Nillowe Kande; Kuruwita Korale. Fl. Feb.–June; yellowish-green, pet. white.

Endemic.

The flowers have a very disagreeable odour.

A very remarkable plant; the leaves have much resemblance to those of *Memecylon Hookeri.*

LV.—ONAGRACEÆ.

HERBS, l. opp. or alt., with or without stip., fl. axillary, regular, bisexual; cal.-tube adnate to whole or half of ov., segm. 4 or 5; pet. 4 or 5; stam. equal to or double the number of pet., epigynous; ov. inferior or half-inferior, 4–5-celled, with numerous ovules, or 2-celled with a solitary ovule in each cell, style simple; fruit a membranous capsule or a hard indehiscent nut; seeds without endosperm.

Seeds very numerous.
- Stam. 8 or 10 . . . . 1. JUSSIÆA.
- Stam. 4 . . . . 2. LUDWIGIA.

Seed solitary . . . . 3. TRAPA.

Our few species are all low-country plants, mostly in wet places. *Trapa* is completely aquatic.

1. **JUSSIÆA,** *L.*

Herbaceous or semi-shrubby perennials, l. alt., entire, fl. axillary, solitary; cal.-tube completely adnate to ov., and not produced beyond it, segm. 4 or 5; pet. 4 or 5; stam. 8 or 10, epigynous; ov. inferior, 4- or 5-celled, with very numerous ovules in each cell, style very short, stigma large; fruit a capsule, irregularly dehiscent between the vertical ribs; seeds very numerous.—Sp. 30; 2 in *Fl. B. Ind.*

Stems creeping or floating; pet. 5 . . . . . 1. J. REPENS.
Stems erect; pet. 4. . . . . 2. J. SUFFRUTICOSA.

1. **J. repens,** *L. Sp. Pl.* 388 (1753). **Béru-diyanilla,** *S.*
Fl. Zeyl. n. 169. Moon Cat. 35. Thw. Enum. 123. C. P. 2793.
Fl. B. Ind. ii. 587. Hook. Bot. Misc. iii. t. supp. 40.

Stem herbaceous, elongated, prostrate or creeping or floating on water, rooting at nodes, much branched, glabrous, succulent, young shoots often pubescent; l. $1\frac{1}{4}$–2 in., linear-spathulate, much tapering to base, rounded at apex, quite glabrous or slightly pubescent, petiole short, slender; fl. about $\frac{3}{4}$ in., ped. shorter than cal., glabrous, without bracts; cal.-tube about $\frac{1}{2}$ in., cylindrical, glabrous or rarely pubescent, segm. 5, narrowly lanceolate, acuminate, much shorter than tube; pet. 5, shortly clawed, obovate; stam. 10, fil. moderately long; fruit about $\frac{3}{4}$ in., cylindrical, narrow but slightly inflated, glabrous or pubescent.

Borders of ponds and tanks in the low country; common. Fl. May–September; pale yellow or white.

Throughout the world in hot countries.

The stems float on the water by means of white spongy bodies (modified stipules ?) springing in tufts from each side of the base of the petioles.

2. **J. suffruticosa,** *L. Sp. Pl.* 388 (1753).
Moon Cat. 35. *J. villosa*, Lam., Thw. Enum. 123. C. P. 2794, 3297.
Fl. B. Ind. ii. 587.

A semi-shrubby perennial, 2–4 ft., woody below, much branched, branches stiff, erect, cylindrical, striate, thickly clothed with short spreading hair; l. 2–4 in., nearly sessile, varying from linear to broadly oval but usually lanceolate, tapering to base, acute, entire, hairy on both sides, lat. veins numerous, prominent beneath; fl. large, $1\frac{1}{2}$–$1\frac{3}{4}$ in., ped. shorter than cal.-tube, with 2 lanceolate bracts at summit; cal. hairy, tube quadrangular, segm. 4, ovate, attenuate, acute, longer than tube; pet. 4, rotundate, shortly clawed, often emarginate, pinnately veined; stam. 8, erect, fil. very short; style very short, stigma large, quadrate-pyramidal; capsule about 1 in., quadrangular, truncate, tapering downwards, hairy, 8-ribbed, thin; seeds minute, ovoid, brown, polished.

Var. β, **subglabra,** *Thw. l. c.* Fl. Zeyl. n. 170. *J. erecta*, L. Sp. Pl. 388; Moon Cat. 35. C. P. 1540.
Lam. Ill. Gen. t. 28, f. 3 (*J. angustifolia*).

L. linear, nearly or quite glabrous; fl. smaller, under 1 in.; capsule longer, much narrower and not tapering, glabrous.

Wet places in the moist low country to 3000 ft.; common. Fl. May–October; bright chrome-yellow.

Throughout the world in warm countries.

Extremes of var. β and the type look so different that I am much in-

clined to follow Linnæus and make 2 species here ; but they are connected by intermediates. The large broad-leaved woolly plant with large flowers is handsome enough for garden cultivation.

2. **LUDWIGIA,** *L.*

Annual herbs, l. alt., entire, fl. solitary, axillary, small; cal.-tube adnate to ov. and not produced above it, segm. 4, persistent; pet. 4; stam. 4, epigynous; ov. inferior, 4-celled, with very numerous ovules; capsule as in *Jussiæa.*—Sp. 20; 2 in *Fl. B. Ind.*

Capsule oblong, somewhat inflated . . . . . 1. L. PARVIFLORA.
Capsule very narrow, linear . . . . . . 2. L. PROSTRATA.

1. **L. parviflora,** *Roxb. Hort. Beng.* 11 (1813).
Herm. Mus. 17. Burm. Thes. 146. Fl. Zeyl. n. 66. *L. oppositifolia,* L. Syst. xii. 135; Moon Cat. 11. Thw. Enum. 123. C. P. 1539, 3298, 3299, 3510.
Fl. B. Ind. ii. 588. Wight, Ill. t. 101.

An erect annual, 6–18 in., stem much branched, often angular, glabrous; l. very variable in size, 1–3½ in., usually about 1½ in., lanceolate-linear to lanceolate, much tapering to base, subacute, glabrous, thin, petiole obscure; fl. small, on very short ped.; cal.-tube cylindrical, oblong, glabrous or slightly pubescent, segm. short, acute; pet. very small, not longer than cal.-segm.; capsule short, ¼–⅜ in., cylindrical, somewhat inflated, glabrous, 4-veined ; seeds very numerous in several rows in each cell.

Low country, especially in the dry region ; very common. Fl. December–May; yellow.

Throughout India, Malaya, and in Trop. Australia and Africa.

There is some doubt as to what this should be called. Linnæus first named it *L. perennis*, and afterwards *L. oppositifolia*, both of which names must be rejected as contrary to fact. *L. zeylanica*, Pers. (1805) would have the next claim, but it was not properly published till 1825 (in Spreng. Syst. Veg. i. 444).

Hermann gives a number of native names for this, including 'Kékirinda,' and says it is used as an eye-medicine.

2. **L. prostrata,** *Roxb. Hort. Beng.* 11 (1813).
Jussiæa parviflora, Moon Cat. 35. Thw. Enum. 123. C. P. 2795.
Fl. B. Ind. ii. 588. Wight, Ic. t. 762.

Annual, stem over 1 ft., glabrous, flaccid ; l. 2–3½ in., lanceolate, tapering to both ends, glabrous, thin, petiole obscure; fl. very small, nearly sessile; cal.-tube ⅝ in., linear, very slender, segm. lanceolate-linear, short, acute ; pet. very small, linear ; capsule ¾ in., very narrow and slender, linear, with very thin transparent walls ; seeds in a single row in each cell.

Moist low country; very rare. I have only seen Moon's specimens collected at Kalutara.

Also in India, Malaya, Japan.

Œnothera fruticosa, L. A form of this common N. American plant has become semi-naturalised by roadsides in the Uva hill-country, having probably originated from Hakgala Garden. Another species, perhaps *Œ. odorata*, is also found in similar localities.

3. **TRAPA**, *L.*

Aquatic herb; l. alt., floating, stipulate; fl. solitary, axillary; cal.-tube adnate to lower half of ov., segm. 4, in 2 pair, outer pair persistent and becoming spinous in fruit; pet. 4; stam. 4, inserted outside lobes of epigynous disk; ov. half-inferior, 2-celled, with a solitary pendulous ovule in each cell; style slender, surrounded at base with a disk of 8 rounded lobes, stigma capitate; fruit large, bony, indehiscent, horned, angular, 1-seeded; seed large, completely filling fruit, cotyledons extremely unequal, one very large and thick, the other merely a very small scale, radicle superior, no endosperm.—Sp. 2; both in *Fl. B. Ind.*

T. bispinosa, *Roxb. Hort. Beng.* 11 (1813). **Ikiliya,** *S.*
Thw. Enum. 124. C. P. 2932.
Fl. B. Ind. ii. 590. Roxb. Pl. Cor. t. 234.

An aquatic, stems long, flexuose, ascending in the water, cylindrical, smooth, the more submerged part thickly set with pairs of green pectinate spreading organs (? roots) coming off from immediately below the position of stip. of fallen l., and 1–1½ in. long; l. crowded in upper part of stem, petiole at first short, but growing as the internodes lengthen to 4 in., cylindrical, upper portion roughly hairy, dilated at a short distance below the end into a large fusiform, spongy float, lower portion glabrous, blade floating on surface of water, 1¼ in. by 1½ in. wide, rhomboid-triangular, truncate and entire at base, irregularly incise-serrate above, acute, very glabrous and shining, dark green mottled with brown above, densely pubescent and reddish-purple beneath, stip. linear, membranous, caducous; fl. few, solitary, axillary, on short, stout, hairy ped.; sep. subacute, pubescent outside; pet. ovate, delicate; fruit ripening under water, 1½ in. wide, turbinate, somewhat compressed, extended above at each end into a spreading, flattened, spinous horn, the top tipped in centre by a short, sharply pointed, conical beak, each side at the base

with a projecting lobe, brownish-black; radicle immediately beneath the central beak, whence it protrudes in germination.

In tanks in the dry region; rather common. Also in the moist low country; very rare, *e.g.*, Heneratgoda. Fl. Feb.; white.

Also in India, Malaya, Trop. Africa. *T. bicornis*, L. f. of China, where the seeds are much used for food, is perhaps a mere variety.

The pectinate submerged organs cannot be considered as leaves (as in Fl. B. Ind., following Wight); their position suggests a stipular nature, and they are so called by Roxburgh, who has well figured and described them (l. c.), but there are real stipules also present with the young leaves.

LVI.—SAMYDACEÆ.

TREES or shrubs, l. simple, alt., with very small stip.; fl. small, regular, bisexual; cal. free or adnate to lower part of ov., segm. 5 (or 4); pet. 5 (or 4), or 0, imbricate, stam. 4–10, perigynous, alternating and often connate with large staminodes; ov. superior or half-inferior, 1-celled, ovules parietal, style simple or 3 or 4; fruit a soft capsule, loculicidally dehiscent by 2 or 3 valves; seeds usually few, surrounded by a fleshy aril, embryo straight in axis of endosperm.

Has strong affinities with *Bixaceæ*.

Pet. 0.
  Fl. in axillary fascicles . . . . 1. CASEARIA.
  Fl. in terminal panicles . . . . 2. OSMELIA.
Pet. 4 or 5 . . . . 3. HOMALIUM.

Osmelia and *Homalium* are confined to the moist region, the former ascending a little into montane zone, to which *Casearia coriacea* is confined. *C. tomentosa* occurs only in the dry region, and *C. esculenta* in all.

1. **CASEARIA,** *Jacq.*

Trees or shrubs, l. alt., stip. minute, fl. small, in axillary clusters; cal. free, deeply cut into 5 segm.; pet. 0; stam. 6 or 8, with alternating staminodes, all slightly connate at base, hypogynous; ov. superior, 1-celled with several ovules, style simple; fruit half-fleshy, dehiscent by 2 or 3 valves; seeds few, surrounded by a red aril, embryo straight, in axis of endosperm.—Sp. 80; 14 in *Fl. B. Ind.*

L. glabrous.
  L. lanceolate or oval . . . . 1. C. ESCULENTA.
  L. obovate . . . . 2. C. CORIACEA.
L. pubescent beneath. . . . . 3. C. TOMENTOSA.

1. **C. esculenta,** *Roxb. Fl. Ind.* ii. 422 (1832). **Wal-waraka,** *S.* **Kakkaipalai,** *T.*

C. ovata, Moon Cat. 35 (? Willd.). *Vareca* zeylanica*, Gaertn. Fruct. i. 290. *C. zeylanica*, *C. Championii*, *C. varians*, vars. *α*, *ovata*, and *β*, *minor*, Thw. Enum. 19. C. P. 415, 2604, 2608, 2657, 3365.

Fl. B. Ind. ii. 592. Bedd. Fl. Sylv. t. 208 (*C. varians*).

A shrub or tree with slender branchlets, bark yellowish-white, smooth, young parts glabrous, l. 2–5 in., from narrow-lanceolate to oval, tapering to base, shortly acuminate, obtuse or subacute, entire or faintly serrate in upper part, perfectly glabrous, rather thick, petiole short, stip. persistent; pet. stout, longer than cal., and articulated at the base which is surrounded by numerous very small bracts, few or many on a raised boss in axils of past and present l.; cal.-segm. ovate, obtuse, persistent; stam. 6 or usually 8, staminodes as long as fil., oblong, ciliate or hairy; fruit about ¾ in., broadly ovoid, apiculate, glabrous or very slightly pubescent, orange-yellow, dehiscing by 3 (or 2), thick valves; seeds several, almost entirely covered by the large fleshy lacerate scarlet aril.

Both moist and dry regions, and extending up to 5000 ft. Fl. Feb. April; greenish; fruit orange.

Also in South India and the Malay Peninsula.

Moon gives the native name 'Wal-munamal.' Possibly this is *S. ovata*, Willd., based on Rheede, Hort. Mal. iv. t. 49, in which case that name would take priority over *S. esculenta*. I agree with Clarke in combining the species of Thwaites. The Fl. B. Ind. quotes C. P. 2603 as var. *angusta*, with narrow lanceolar leaves, which number is referred by Thwaites to his *C. zeylanica*.

Wood pale yellow, moderately hard and heavy. The wood and leaves are used medicinally; the fruit is eaten.

2. **C. coriacea,** *Thw. Enum.* 20 (1858).

C. varians, var. *γ*, *obovata*, Thw. Enum. 20. C. P. 465, 1217.

Fl. B. Ind. ii. 592.

A moderate-sized tree, twigs glabrous; l. 2–3 in., obovate-oval or obovate, tapering to base, obtuse or rounded at apex, entire, glabrous, more or less coriaceous, venation conspicuous, reticulate, petiole very short; ped. short, slender, glabrous, arranged as in the last; cal.-segm. rounded, stam. 6 (or 8), staminodes about half as long as fil., ciliate, ov. glabrous; fruit about ¾ in., ovoid, apiculate, smooth, 2-valved, orange.

Upper montane zone above 6000 ft.; rare. Adam's Peak; Nuwara Eliya. Fl. Jan.; green.

Endemic.

C. P. 465, from Adam's Peak, has the l. more coriaceous, and with a more copious reticulation.

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* *Vareca*, from the Sinhalese name.

3. **C. tomentosa,** *Roxb. Fl. Ind.* ii. 421 (1832).
Thw. Enum. 19. C. P. 1248.
Fl. B. Ind. ii. 593. Brandis, For. Fl. t. 31.

A shrub or small tree, twigs pubescent; l. 3–4 in., lanceolate-oblong, acute at base, acute or obtuse at apex, shallowly crenate-serrate, nearly glabrous above, pubescent beneath, petiole $\frac{1}{4}$–$\frac{3}{4}$ in., pubescent; fl. not seen; fruit about $\frac{3}{4}$ in., ovoid, apiculate, bluntly 6-angled, 3-valved.

Dry region; very rare. Jaffna and Sigiri (Gardner).
Also in India, Malaya, N. Australia.
I have seen only Gardner's specimens.

2. OSMELIA, *Thw.*

Tree, l. alt., with minute deciduous stip.; fl. small, in long terminal panicles; cal. free, with 5 deep segm.; pet. 0; stam. 10, 5 alternating with large hairy bifid scale-like staminodes and 5 coming off from them between their lobes; ov. superior, 1-celled, with 3 placentas and few ovules on each, styles 3, short; fruit a subcoriaceous 3-valved capsule; seeds 1–4, surrounded by a fleshy red aril, embryo straight, in axis of endosperm.—Sp. 3; 1 in *Fl. B. Ind.* (the other 2 from the Philippine Is.).

O. Gardneri, *Thw. Enum.* 20 (1858).
C. P. 1246.
Fl. B. Ind. ii. 592 (*O. zeylanica*). Bedd. Fl. Sylv. t. 209.

A moderate-sized tree, with smooth grey bark, twigs cylindrical, pilose; l. $2\frac{1}{2}$–4 in., lanceolate, acute at base, suddenly and shortly acuminate, obtuse, entire, glabrous, veins slender, conspicuous, petiole $\frac{1}{4}$–$\frac{3}{8}$ in.; fl. numerous, almost sessile, surrounded at base by a small cup-like bractlet, in interrupted spicate racemes arranged in long drooping terminal panicles; cal.-segm. rounded; ov. very hairy; fruit about $\frac{1}{2}$ in., subglobose, densely pubescent, purplish.

Moist region at 2000–4000 ft.; rare. Hantane (Gardner); Uduwelle; Alagala; Potupitiya, Kukul Korale. Fl. July, August; greenish-white, tinged with pink.
Endemic.

3. HOMALIUM, *Jacq.*

Large tree, l. alt., simple, fl. small, in long axillary racemose panicles; cal.-tube adnate to lower half of ov., segm. 4 or 5; pet. 4 or 5; stam. 4 or 5, opp. pet., alternating with rounded, pubescent, bilobed staminodes; ov. $\frac{1}{2}$-inferior, 1-celled,

with 4 clusters of ovules pendulous from near top, styles 4, long; fruit capsular.—Sp. 30; 11 in *Fl. B. Ind.*

Sometimes regarded as a separate order, and often placed near *Chailletiaceæ.*

H. zeylanicum, *Benth. in Journ. Linn. Soc.* iv. 35 (1860). **Liyaṇ, Liyangu,** *S.*

Blackwellia zeylanica, Gardn. in Calc. Journ. Nat. Hist. vii. 452. Thw. Enum. 79, 410. C. P. 388.

Fl. B. Ind. ii. 597. Wight, Ic. t. 1851 (*B. tetrandra*). Bedd. Fl. Sylv. t. 210.

A very large tree, with a straight trunk, bark white, rather rough, breaking off in irregular pieces; l. 2½–5 in., oval, narrowed to base, shortly acuminate, acute, serrate-crenate, glabrous and shining on both sides, rather thick, veins somewhat prominent and purplish-red beneath, petiole very short; fl. very numerous, articulated on short ped., closely arranged in numerous dense corymbose clusters, on a long, narrow, interrupted pendulous panicle, 6–9 in. long; cal.-tube glabrous, segm. oblong, obtuse, pubescent; pet. spathulate-oblong, obtuse, twice as long as cal.-segm., pubescent, ciliate; stam. longer than pet.; fruit not seen.

Moist low country to 3000 ft.; rather common. Fl. March–June; greenish-white.

Also in Malabar.

The young leaves are a fine crimson colour. In both Wight's and Beddome's figures the panicles are erroneously represented as erect. The cal.-segm. and pet. are precisely alike except in size. I have never been able to find a fruit, nor is it described (in this or any of the Indian species) in the books I have consulted.

Wood pale brown, the heart-wood darker, heavy, very hard and close-grained, durable.

Turnera ulmifolia, L. (Order *Turneraceæ*), a West Indian and Trop American species, is a very common weed of roadsides and waste ground about Colombo and other places in the low country. The flowers are bright yellow, and the leaves have a musky odour. There is a figure in Bot. Mag. t. 281.

LVII.—PASSIFLORACEÆ.

Perennial herbs climbing by tendrils of the inflor.; fl. regular, unisexual, diœcious, in axillary cymes; male fl.:—cal. campanulate, segm. 5, imbricate; pet. 5, distant, included in cal.-tube; disk (corona) a row of white cilia arising from base of cal.-tube, and 5 erect glands opp. segm.; stam. 5, peri-

gynous, inserted at base of cal.-tube, distinct or connate; fem. fl.:—cal. and pet. as in male; staminodes 5, erect, surrounding ov.; ov. superior, stalked, 1-celled, with 3 parietal placentas, ovules numerous, stigmas 3, feathery or fringed; fruit a capsule, dehiscing loculicidally by 3 valves; seeds several, enveloped in a pulpy aril, flattened, muriculate, embryo straight in fleshy endosperm.

Our single genus is not typical for the Order, belonging to the tribe *Modecceæ*. Both our species are low-country plants.

MODECCA,* *Lam.*

For characters, see Order.—Sp. about 25; 6 in *Fl. B. Ind.*

Fl. small, $\frac{1}{6}$ in. long, stigmas sessile . . . . 1. M. WIGHTIANA.
Fl. large, $\frac{5}{8}$ in. long, styles long . . . . 2. M. PALMATA.

1. **M. Wightiana,** *Wall. Cat. n.* 6764 (1828).
Thw. Enum. 128. C. P. 1621.
Fl. B. Ind. ii. 601. Wight, Ic. t. 179.

Small perennial herb, stems long, flexuose, wide-spreading, very slender, glabrous; l. distant, few, readily disarticulating, 2–3 in., variable in form, cordate-ovate or triangular or more or less 3-lobed, cordate at base, acute at apex, entire or faintly dentate, glabrous, very thin, often minutely brown-dotted on upper surface, petiole $\frac{1}{2}$–1 in., dilated at summit, where is a large prominent gland; fl. small, $\frac{1}{6}$ in., on slender articulated ped., in two short opp. cymes near the end of a long slender axillary curved peduncle, which is continued beyond as a much-coiled circinate tendril; cal.-tube campanulate-turbinate, segm. about as long as tube, ovate, acute; pet. rather shorter than cal.-segm., ovate, inserted about middle of cal.-tube, disk (corona), a ring of hair arising from cal.-tube just below pet.; male fl.:—stam. connate at base, anth. ovoid; fem. fl.:—ov. very shortly stalked, surrounded by 5 erect staminodes, ovoid, tapering, style 0, stigmas fringed; fruit very shortly stalked, the stalk surrounded by persistent cal., about $1\frac{1}{2}$ in., not pointed, valves chartaceous, smooth, brownish-yellow; seeds about 8, $\frac{1}{5}$ in., surrounded by the aril, ovoid, compressed, strongly muriculate on sides.

Dry country; rather rare. Jaffna; Puttalam; Karativu; Trincomalie; Kekirawa. Fl. Aug.–Nov.
Also in S. India.

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* *Modecca* is given as the Malabar name by Rheede, Hort. Mal. iv. 39.

2. **M. palmata,** *Lam. Encycl.* iv. 209 (1796). **Hondala, Potu-honda,** *S.*

Herm. Mus. 41. Burm. Thes. 49. Fl. Zeyl. n. 353 (in part). *Bryonia palmata*, L. Sp. Pl. 1012. *M. tuberosa*, Roxb., Moon Cat. 48. Thw. Enum. 128. C. P 1627.

Fl. B. Ind. ii. 603. Wight, Ic. t. 201.

A large perennial herb, becoming woody at base, stems long, thickened at nodes, cylindrical, smooth and shining, mottled with purple and covered with a 'bloom,' slightly branched; l. large, 4–5 in., broader than long, usually very deeply palmately 5-lobed (rarely 3-lobed or undivided), very glabrous and shining, especially beneath, lobes oval, narrowed at base, shortly acuminate, acute, entire, veins conspicuous, vinous-red, prominent beneath, where are often dots of red colour, and between the bases of main veins 4 circular, flat, pellucid glands, as well as 2 larger ones on the outer side of the lateral veins, petiole about 2 in., stout, curved, with 2 short setaceous stip. at base; fl. rather large, on short articulated ped. in two opposite cymes of three, on a long axillary peduncle, which is continued beyond them as a long simple tendril; cal. $\frac{5}{8}$ in., truncate at fleshy base ,broadly and squarely campanulate, glabrous, segm. triangular, acute, slightly spreading; pet. small, distant, linear, inserted at base of cal.-tube, rather larger in male fl., more or less hairy, disk wide, with 5 circular pits opp. segm., with white cilia (corona) on their outer side, and a short blunt, erect process within each; male fl.:—stam. distinct, fil. very short, anth. linear, ov. rudimentary; fem. fl.:—staminodes 5, erect, immediately surrounding ov., small, acute, ov. shortly stalked, globose, smooth, tapering into 3 long styles, stigmas much divided, feathery; fruit nearly 2 in., on a short stalk, globose, apiculate, smooth, orange, splitting into 3 fleshy valves; seeds on long stalks, nearly $\frac{1}{2}$ in., muriculate and pitted, black, each enclosed in large pulpy aril.

Moist low country; common. Fl. May–August; greenish-white, tinged with pink.

Also in the Indian Peninsula.

The only specimen now in Hermann's Herb. representing *Bryonia palmata*, L. is a very bad one, and no doubt is *B. laciniosa;* but Linnæus seems to have had specimens of the present plant also before him in writing his description.

The fruit is poisonous, and has caused death. The root is used in medicine.

Passiflora suberosa, L., with small green flowers and purple fruit like a small grape, is occasionally found as a weed in the moist low country. It is figured as a Ceylon plant under the name of *P. Walkeriæ* in Wight, Ill. t. 108. Native of the W. Indies.

P. fœtida, L., is extremely common, and has spread into forest in the dry country, where it has in many places quite the look of a native. It is also indigenous to Tropical America, and is easily to be known by the beautifully pectinate and moss-like involucre.

P. edulis, Sims, has escaped from cultivation in the hill country. It has an edible fruit which goes by the name of 'Sweet-cup' in Jamaica.

P. stipulata, Aubl., *P. glauca*, Ait. (non Kunth), is common by roadsides in the montane zone as an escape from cultivation, and in places quite naturalised. Native of Trop. S. America.

We have no native species of *Passiflora*.

LVIII.—CUCURBITACEÆ.

HERBACEOUS, climbing by spirally twining tendrils arising solitarily at the nodes by the base of the l.; l. alt., simple (rarely compound), often palmately divided; fl. regular, unisexual, monœcious or diœcious; male fl.:—cal.-tube usually short. campanulate, segm. 5, small; pet. 5, usually more or less connate (rarely free), inserted on cal.-tube, valvate or imbricate; stam. 3 (rarely 5), inserted on cal.-tube, anth. distinct or connate, one 1-celled, two 2-celled, cells linear, conduplicate or sigmoid or nearly straight; fem. fl.:—cal.-tube adnate to ov. and often produced beyond it, segm. as in male; pet. as in male; staminodes 3 or 5 or none, ov. completely inferior, 1-celled, with 3 large fleshy parietal placentas often meeting in centre (hence apparently 3-celled), ovules usually numerous, horizontal, rarely few and pendulous, stigmas 3, large; fruit fleshy, generally indehiscent; seeds usually numerous, surrounded with pulp, no endosperm.

The most recent account of this difficult Family is that by Cogniaux in Monogr. Phanerog. iii. (1881). The cal. and pet. are often so fused below that the cal.-segm. looks like appendages on the outside of a cor.-tube.

Of the 26 Ceylon species the greater part are plants of the low country, and many occur in both moist and dry regions. But the latter has the greater number, and *Citrullus*, *Rhynchocarpa*, *Corallocarpus*, *Ctenolepis*, and *Cucumis trigonus* are confined to it, whilst *Zanonia* and *Zehneria hastata* are restricted to the moist region. Seven of the low-country species extend into the montane zone, and the following are found only there: *Cerasiocarpum*, *Gynostemma*, *Trichosanthes integrifolia*, and *Mukia leiosperma*. Only 3 specimens are endemic.

Stam. 3 (sometimes 5); fem. fl. solitary.
  Anth.-cells conduplicate or sigmoid.
    Pet. strongly fimbriate . . . . . . 1. TRICHOSANTHES.
    Pet. (or cor.-lobes) not fimbriate .
      Cal.-tube of male fl. long, tubular . . 2. GYMNOPETALUM.
      Cal.-tube of male fl. short, campanulate.
        Anth. more or less connate.
          Cor. campanulate, cut about half way down . . . . . . 3. CEPHALANDRA.
          Cor. cut nearly to the base.
            Fruit tubercled. . . . . . 4. MOMORDICA.
            Fruit smooth . . . . . . 5. CUCUMIS.
        Anth. distinct.
          Male fl. in racemes . . . . 6. LUFFA.
          Male fl. solitary or in clusters.
            Fruit with hard pericarp . . . 7. CITRULLUS.
            Fruit a soft berry . . . . 8. BRYONIA.
  Anth.-cells straight or slightly curved.
    Fruit globose or ovoid, not beaked.
      Male fl. in clusters . . . . 9. MUKIA.
      Male fl. in racemes . . . . 10. ZEHNERIA.
    Fruit beaked, indehiscent.
      Fruit glabrous . . . . . 11. MELOTHRIA.
      Fruit very hairy . . . . 12. RHYNCHOCARPA.
    Fruit beaked, dehiscent round the base. . 13. CORALLOCARPUS.
    Fruit depressed, not beaked.
      Depressed-globose, seeds 3–6 . . 14. CERASIOCARPUM.
      Depressed-turbinate, seeds 1–2 . 15. CTENOLEPIS.
Stam. 5; fem. fl. in racemes or panicles.
  L. compound . . . . 16. GYNOSTEMMA.
  L. simple . . . . 17. ZANONIA.

1. **TRICHOSANTHES,** *L.*

Annual or perennial, tendrils branched or simple, l. palmately lobed or entire, fl. diœcious, rarely monœcious, male usually in racemes (rarely solitary), fem. solitary; cal.-tube very long, segm. large or small, pet. distinct or nearly so, fimbriate; male fl.:—stam. 3, inserted in cal.-tube, fil. short, anth. connate, linear-oblong, cells conduplicate; fem. fl.:—ov. with numerous horizontal or pendulous ovules on 3 parietal placentas, style simple, stigmas 3; fruit large, globose or narrow, red; seeds numerous, compressed, each enclosed in an envelope of coloured pulp.—Sp. 40 (Cogn.); 12 in *Fl. B. Ind.*

Male fl. with large sheathing bracts . . . . 1. T. PALMATA.
Male fl. without or with very small bracts.
  Male fl. in racemes.
    L. much longer than broad . . . . . 2. T. NERVIFOLIA.
    L. broader than long . . . . . . 3. T. CUCUMERINA.
  Male fl. solitary . . . . 4. T. INTEGRIFOLIA.

1. **T. palmata,** *Roxb. Fl. Ind.* iii. 704 (1832). **Titta-hondala,** *S.*
Bryonia palmata, Moon Cat. 67. Thw. Enum. 127. *T. bracteata,* Voight, Cogn. Mon. 375. C. P. 1626.
Fl. B. Ind. ii. 606. Wight, Ill. tt. 104, 105.

Stems long, woody below, wide-climbing, angular, slightly scabrous, tendrils 3- or 2-fid; l. 4–5 in. and about equally wide, variable, more or less deeply palmately 3- or 5-lobed, lobes acute, more or less dentate-serrate, glabrous, often scabrous with small scales above and on the veins beneath, petiole about 1 in., scaly-scabrous; racemes of male fl. 6–9 in., drooping, fl. large, over 2 in., nearly sessile, distant, each in the axil of a very large broadly wedge-shaped, glabrous or pubescent, lacerate, persistent bract 1 in. or more long, often set with broad flat glands; cal.-segm. leafy, laciniate, pet. rather longer than cal.-segm., 1 in., wedge-shaped, with many and long filiform laciniæ; fem. fl. shortly stalked; cal.-tube nearly 2 in., segm. acuminate, pet. shorter and narrower than in male, style long; fruit large, $2\frac{1}{4}$–$2\frac{1}{2}$ in., globose with a blunt nipple, smooth, brilliant scarlet-crimson, pericarp thick; seeds densely packed, about $\frac{1}{2}$ in., oblong, compressed, smooth, brownish-grey, each enveloped in dark-green pulp.

Var. β, **tomentosa,** *Heyne ex Fl. B. Ind. l. c.*

L. divided less than half way down, tomentose beneath.

Low country; rather common, especially in dry region. Var. β, rare. Peradeniya. Fl. Feb.–June; bright pink.

Throughout the Eastern Tropics.

The large scarlet fruits are very conspicuous and ornamental. The pounded fruit is employed as an application to ulcers.

Cogniaux (Mon. Phan. iii. 376) quotes C. P. 1302 for this, which is a Fern.

2. **T. nervifolia,** *L. Sp. Pl.* 1008 (1753).
T. caudata, Willd., Moon Cat. 66. Thw. Enum. 127. C. P. 1608.
Fl. B. Ind. ii. 609. Rheede, Hort. Malab. viii. tt. 16 (fem.) and 17 (male).

A large perennial, stems somewhat woody below, flexible, thickened at nodes, much branched, branches slender, striate, glabrous, tendrils bifid; l. $2\frac{1}{2}$–$3\frac{1}{2}$ in., ovate-lanceolate, cordate or rarely lobed at base, very acute, mucronate, distantly denticulate, glabrous, dark green, paler beneath with prominent reticulate venation, petiole $\frac{1}{2}$–1 in.; male fl. on short ped., 4–12 in pedunculate corymbose racemes, bracts small, caducous; cal.-tube $\frac{3}{4}$–$1\frac{1}{4}$ in., very narrow, inflated above, segm. minute, setaceous, pet. oblong, acuminate, with the fimbriæ much branched and very long at end of pet. but shorter on the sides, doubled inwards in the bud; fem. fl. shortly

stalked, solitary, cal.-tube nearly 2 in., very much produced above ov., segm. longer than in male fl.; fruit $1\frac{1}{2}$ in., ovoid, shortly beaked, smooth, scarlet, pericarp thin; seeds few with very long stalks, ovoid, compressed, thickened at margins, each enclosed in an envelope of scarlet pulp.

Moist low country and lower montane zone; rather common. Fl. Jan.–July; white.

Also in Western India.

3. **T. cucumerina,** *L. Sp. Pl.* 1008 (1753). **Dummélla,** *S.* **Pudal,** *T.*

Moon Cat. 66. Thw. Enum. 126. C. P. 2806.

Fl. B. Ind. ii. 609. Rheede, Hort. Malab. viii. t. 15.

Annual, stems slender, glabrous or slightly hairy, tendrils 3-fid; l. 2–4 in. long and considerably broader, very cordate, with an excavated sinus at base, more or less deeply palmately 3- or 5- or 7-lobed usually about half way down, lobes rounded or subacute, distantly denticulate, glabrous or nearly so above, more or less pubescent beneath, thin; fl. often monœcious, male in long-stalked racemes, female often in same axil, solitary, shortly stalked; male fl.:—cal.-tube about 1 in., dilated at top, segm. narrowly lanceolate, acute, spreading, pet. $\frac{3}{8}$ in., lanceolate-oblong, with a tuft of curled laciniæ at apex; fem. fl.:—cal.-tube gradually dilated upwards, lower part often hairy; fruit $1\frac{1}{2}$–2 in., ovoid-fusiform, tapering at both ends, with a long sharp beak, smooth, at first striped with white, afterwards scarlet, pericarp thin; seeds compressed, surrounded with red pulp.

Var. β, **laciniosa,** *Thw. l. c.* C. P. 1620.

L. deeply cut nearly to the base, segm. oblong, densely pubescent beneath.

Low country, common; var. β, especially in the dry region. Fl. Sept.–December; white.

Also in India, Malaya, and N. Australia.

Var. β is connected with the type by intermediate forms.

The plant is much used as a febrifuge medicine; the bitter and purgative fruit is also eaten after being cooked.

T. anguina, L., the 'Snake-gourd' of the English (*Patola*, S., *Podivilangu*, T.) is probably only a cultivated variety of the last. The long fruit is variously twisted and contorted. It is well figured in Duthie, Field and Garden Crops, t. 46, and is only known as a cultivated plant, the fruit being a favourite vegetable.

4. **T. integrifolia,** *Thw. Enum.* 127 (1859) non Kurz. [PLATE XLII.]

T. Thwaitesii, Cogn. Mon. Phan. iii. 387. C. P. 1629.

Fl. B. Ind. ii. 610.

Stems angular, glabrous, tendrils long, simple; l. $2\frac{1}{2}$–4 in., ovate-oval, rounded or subcordate at base, acuminate, often twisted at apex, acute, entire, glabrous, subcoriaceous, strongly 3-nerved from the base, venation prominent beneath; male and fem. fl. both rather large, solitary, axillary, ped. $\frac{3}{4}$–1 in.; fruit globose, 2 in. diam., smooth, crimson; seeds oblong, compressed, smooth, grey, each enclosed in an envelope of deep green pulp.

Lower montane zone; rare. Uduwela, Hantane; Dolosbagie. Fl. July; pale yellow.

Endemic.

The leaves are like those of *Smilax*, the crimson fruit as large as an apple and very handsome, the pulp surrounding the seeds is a dull, deep, metallic green.

There is no necessity for Cogniaux's new name, as Kurz's *T. integrifolia* was not published till 1877.

2. **GYMNOPETALUM,** *Arn.*

Perennial herb, tendrils simple, l. slightly lobed, fl. small, diœcious, male in close racemes, fem. solitary; cal.-tube long, contracted at top, segm. setaceous; pet. spreading, not fimbriate; male fl.:—stam. 3, inserted above middle of cal.-tube and included in it, anth. connate, cells conduplicate; fem. fl.:—staminodes 3, very small, ov. very hairy, style long, stigmas 3, long; fruit fusiform, red; seeds numerous, ovoid, compressed, each enclosed in coloured pulp.—Sp. 6 (Cogniaux); 4 in *Fl. B. Ind.*

G. Wightii, *Arn. in Hook. Journ. Bot.* iii. 278 (1841). [PLATE XLIII.]

Thw. Enum. 127. C. P. 1625.

Fl. B. Ind. ii. 612.

Stems slender, furrowed, bristly, young parts hairy; l. 2–4 in., cordate-ovate, with deep narrow sinus at base, acuminate, very acute, more or less (usually slightly) 3- or 5-lobed, distantly denticulate, rough with short coarse bristly hairs above, more softly hairy beneath, petiole hispid; racemes of male fl. stalked, short, umbellate, crowded, ped. slender, bracts small, setaceous; cal.-tube $\frac{3}{4}$–1 in., more or less hispid or hairy, segm. setaceous; pet. about $\frac{1}{4}$ in., oblong-ovate, acute; fruit $1\frac{1}{2}$–2 in., tapering at both ends, tipped with withered cal., scarlet, slightly hispid; seeds $\frac{1}{4}$ in., smooth, blackish-brown, immersed in pale-red pulp.

Var. β, **zeylanicum,** *Arn. l. c.* (sp.). *Bryonia tubiflora*, W. and A. Prod. 347.

L. more strongly 5-lobed; cal.-tube glabrous or nearly so.

Low country in both moist and dry regions and lower montane zone; rather common. Abundant about Anuradhapura. Var. β, Trincomalie, 1796 (Rottler). Fl. April, October; white.

Also in S. India.

Var. β is probably not worth distinction, but Cogniaux keeps it up as a species under the name *G. tubiflorum;* Rottler's specimens (now in Herb. Kew) are the type of *B. tubiflora*, W. and A.

The leaves form an ingredient in curries in the dry country.

Lagenaria vulgaris, Ser., the 'Bottle-Gourd,' *Diya-labu*, S., *Churai*, T., is commonly cultivated. It is figured in Duthie, Crops, t. 48. There are several varieties in the form of the fruit besides the usual bottle-shape.

3. **CEPHALANDRA**, *Schrad.*

Perennial, tendrils simple, fl. diœcious, rather large, solitary, axillary; cal.-segm. linear; pet. combined about half way up to form a 5-lobed campanulate corolla; male fl.:—stam. 3, anth. connate, cells conduplicate; fem. fl.:—ov. solid, placentas 3, style short, stigmas very large; fruit ovoid, cylindrical, smooth, red; seeds numerous, ovoid, compressed, each surrounded by envelope of coloured pulp.—Sp. 12; 1 in *Fl. B. Ind.* (the rest African).

C. indica, *Naud. in Ann. Sc. Nat. ser.* 5, v. 16 (1866). **Kowakka,** *S.* **Kovvai,** *T.*

Bryonia grandis, Willd., Moon Cat. 67. *Coccinea indica*, W. and A., Thw. Enum. 128. C. P. 1069.

Fl. B. Ind. ii. 621. Burm. Thes. t. 19, ff. 1, 2. Hook. Ic. Pl. t. 138.

Stems slender, cylindrical, quite glabrous; l. 2–4 in., variable in form, usually broadly cordate-ovate in outline, with the basal sinus triangular, obtuse, apiculate, more or less 5-lobed, distantly dentate, quite glabrous on both sides, rather succulent, dull green above, glaucous beneath, finely punctate, provided with several large flat circular glands near the axils of the veins beneath, especially at the base; peduncle 1½–2 in.; cal. glabrous, segm. linear, reflexed; cor. 1½ in. diam., widely campanulate, segm. broad, acute, recurved, pubescent inside, veiny; male fl.:—fil. free; fem. fl.:—ov. fusiform, glabrous, stigmas long; fruit 1–1½ in., fusiform-ovoid, cylindrical, slightly beaked, smooth, bright scarlet when fully ripe; seeds oblong-ovoid, much compressed, smooth, yellowish-grey.

Low country, especially in the dry region in bushy places; common. Fl. June–September; white, with green veins.

Also throughout India, Malaya, and Trop. Africa.

The large white bell-flowers and brilliant scarlet fruits render this a very pretty little creeper. The leaves vary greatly in the depth of the

partitions, when very deeply cut nearly to the base it is var. *alceæfolia*, Cogn. l. c. 531, occasionally met with. The structure of the fruit is peculiar, the seeds are truly parietal in attachment, but each is enclosed in a separate compartment and surrounded by a reddish pulp; thus a vertical section looks like that of a small pomegranate.

I refrain from quoting Fl. Zeyl. n. 354 and *Bryonia cordifolia*, L. for this, as Hermann's specimens are undoubtedly *Mukia scabrella*. Cogniaux (l. c. 529), however, adopts Linnæus's specific name, and calls this plant *Coccinia cordifolia*.

4. MOMORDICA, *L.*

Annual or perennial, tendrils simple, fl. monœcious or diœcious, male in racemes or solitary, fem. solitary; cal.-segm. 5, oval or narrow; pet. very slightly connate at base; stam. 3, anth. slightly connate, cells conduplicate; ov. muricate or papillose, style short, stigmas large; fruit ovoid or fusiform, beaked, coarsely tuberculate, many-seeded; seeds rather large, ovoid, in a pulpy envelope.—Sp. 35 (Cogniaux); 6 in *Fl. B. Ind.*

Fl. monœcious . . . . 1. M. CHARANTIA.
Fl. diœcious.
  Male fl. solitary, with a large hooded bract beneath 2. M. DIOICA.
  Male fl. usually in racemes, without bracts beneath 3. M. DENUDATA.

1. ***M. Charantia,** *L. Sp. Pl.* 1009 (1753). **Karivila, Batu-karivila,** *S.* **Pakal, Nutipakal,** *T.*

Herm. Mus. 39. Burm. Thes. 161. Moon Cat. 66. Thw. Enum. 126. C. P. 1614.

Fl. B. Ind. ii. 616. Wight, Ic. t. 504. Duthie, Crops, t. 64.

Annual, stems somewhat twining, much branched, sharply 5-angled, roughly pubescent, young parts hairy; l. 2½–5 in., almost circular in outline, very deeply cordate at base, palmately cut to beyond the middle into 7 or 9 lobes, lobes acute, apiculate, coarsely spinous-dentate, pubescent on the veins on both sides, petiole 1–2 in., channelled above and narrowly bordered with decurrent leaf-base; fl. monœcious, solitary, axillary, on slender peduncles 2 or 3 in. long, usually with a large, sessile, rotundate, entire bract on the lower half, and often close to the base; cal.-segm. oval, subacute, pubescent; pet. twice as long as cal.-segm., rounded, veiny; fem. fl.:—ov. finely pubescent, stigmas bilobed; fruit large, 3–6 in., pendulous, fusiform, usually pointed or beaked, closely tubercled and also bluntly muricated, orange-coloured; seeds ovoid, large, about ½ in., compressed, each enclosed in red pulpy envelope.

Low country up to 3000 ft., but cultivated or escaped from cultivation always. Fl. June–August; lemon-yellow.

Throughout the Tropics.

Several varieties are grown, and much used for curries by the natives. *M. zeylanica*, Mill., is a form with shorter fruit. Leaves very bitter to the taste (hence the plant was called 'Maragosa' by the Portuguese) with a disagreeable smoky odour when bruised.

2. **M. dioica,** *Roxb. in Willd. Sp. Pl.* iv. 605 (1805). **Tumba-karivila,** *S.* **Tumpai, Paluppakal,** *T.*
Moon Cat. 66. Thw. Enum. 126. C. P. 197.
Fl. B. Ind. ii. 617. Wight, Ic. tt. 505 (male), 506 (female).

Perennial, with tuberous roots, stems somewhat compressed and 2-edged, striate, glabrous and shining; l. variable, 2–4 in., broadly ovate in outline, very cordate at base, acute, more or less deeply cut into 3 or 5 lobes, distantly dentate or denticulate, thin, quite glabrous and shining on both sides, minutely punctate beneath, petiole 1–1½ in., pubescent, channelled above; fl. diœcious, solitary, peduncle about 2 in., slender, glabrous or finely pubescent, in the male with a large hooded bract a little below the fl. and enclosing it, in the fem. with a minute bract below the middle; cal.-segm. distant, linear; pet. ½–1 in., lanceolate, acuminate, slightly pubescent; fem. fl.:—ov. densely covered with long soft papillæ, stigmas bifid with erect horns; fruit about 2 in., oblong-ovoid, beaked, glabrous, evenly covered with equal-pointed papillæ; seeds broadly oblong, compressed, nearly smooth, pulpy covering red.

Low country, especially in the dry region; common. Fl. June–August; pale lemon-yellow.

Throughout India and Malaya.

The leaves vary extremely in the depth of the lobes; they are not bitter to the taste. The fruit is bitter, but that of the cultivated forms is much less so and is eaten as a vegetable.

3. **M. denudata,** *Clarke in Fl. Brit. Ind.* ii. 618 (1879).
M. dioica, var. *denudata*, Thw. Enum. 126. Cogn. l. c. 448. C. P. 1615.
Fl. B. Ind. ii. 618.

Annual (?) stems compressed, 2-edged, furrowed, glabrous, young parts glabrous; l. 2–4 in., cordate-ovate in outline, very acute, more or less deeply 3- or 5-lobed at base, distantly denticulate, glabrous, punctate beneath, petiole channelled above, slightly pubescent; fl. diœcious, male in a small raceme of 4–8 and a separate basal one (often alone produced), ped. about ½ in., puberulous, bracts minute, fem. solitary; cal.-segm. linear-lanceolate or linear, acuminate, longer in fem.; pet. ¼–1 in., lanceolate, acute, pubescent, narrower in fem.; ov. densely covered with long acute papillæ; fruit about 1½ in., ovoid, usually lop-sided, suddenly narrowed into a strong

blunt beak, covered with short pointed processes; seeds large, over $\frac{1}{4}$ in., ovoid, not compressed, tuberculate.

Moist region and lower montane zone, 1500–4000 ft.; rather common. Matale (Gardner); Hunasgiriya; Maturata; Ramboda; Dimbula; about Kandy. Fl. July, Nov., Dec.; lemon-yellow.

Endemic.

The leaves are very variable; the central lobe is, however, always the largest, and is often elongated and very acuminate.

5. **CUCUMIS,** *L.*

Annual (or perennial?), tendrils simple; fl. rather small, monœcious, male in small clusters, fem. solitary; cal.-limb campanulate, segm. 5, setaceous; pet. 5, connate at base; male fl.:—stam. 3, fil. very short, anth. connate (or distinct?), connective produced into a lobed appendage; fem. fl.:—style short, slender, stigmas very large; fruit fleshy, spherical or ovoid, solid, smooth; seeds very numerous, oblong-oval, compressed, smooth.—Sp. about 25; 4 in *Fl. B. Ind.*

L. rather deeply cut into 5 obtuse lobes . . . 1. C. TRIGONUS.
L. shallowly cut into 3 or 5 acute lobes . . . 2. C. PUBESCENS.

1. **C. trigonus,** *Roxb. Fl. Ind.* iii. 722 (1832). **Metukku,** *T.*
Thw. Enum 127. C. P. 1618.
Fl. B. Ind. ii. 619. Wight, Ic. t. 497.

Annual (?), stems numerous, prostrate, more or less hispid; l. rather small, $1\frac{1}{2}$–2 in., broadly cordate-ovate, more or less deeply 5-lobed, lobes rounded, dentate, scabrous on both sides, petioles usually longer than l.; fl. as in *C. pubescens;* fruit not seen.

Dry region; rather rare. Aripo and Batticaloa (Gardner); Mannar; Minneri.

Throughout India, Affghanistan, Persia.

I am quite doubtful as to the name of this dry-country plant, of which I have not seen the fruit. I suspect our specimens are often merely degenerated examples of the common native cucumber, 'Rata-kékiri' (a form of *C. sativus*, L.), which is much cultivated.

Wight, l. c., figures the fruit as globular, less than 1 in. diam., and with 10 stripes down the sides.

C. pubescens, *Willd. Sp. Pl.* iv. 614 (1805). **Gon-kékiri, Kékiri,** *S.*
C. maderaspatanus, Moon Cat. 67 (non L.). Thw. Enum. 127. C. P. 3534.
Fl. B. Ind. ii. 619 (under *C. trigonus*). Wight, Ic. t. 496 (?). Royle, Ill. Him. t. 47 f. 3 (*C. Hardwickii*).

Stems long, bluntly angular, rough with hooked prickly hairs on ridges; l. 3–$4\frac{1}{2}$ in., broadly cordate-ovate, with the

basal lobes rounded, usually shallowly cut into 3 or 5 acute lobes, slightly dentate, very roughly hairy on both sides, petiole stout, often as long as l., deeply sulcate above, often much twisted, very harsh with prickly hairs; fl. shortly stalked, $\frac{3}{4}$ in. wide; cal.-limb campanulate, very hairy, segm. setaceous; pet. united for about $\frac{1}{4}$ up, rounded; male fl.:—anth. small, connate; fem. fl.:—cal.-tube constricted above ov., ov. ovoid, with scattered, bulbous-based, bristly, deciduous hairs; fruit ovoid-globose, slightly trigonous on section, about $1\frac{1}{2}$ in. by $1\frac{1}{4}$ wide, quite glabrous, obscurely striped with dark and light green, solid, fleshy, with 3 partitions; seeds very numerous, horizontal, narrowly ovoid, compressed, smooth.

Waste ground in the low country; common. Fl. Aug., Sept.; yellow. Throughout India and Malaya.

The name of this is very doubtful; the fruit is always quite glabrous. It appears to be a native, and may be the wild original of *C. sativus*, L., the cucumber, or *C. Melo*, L., the melon. Cogniaux refers C. P. 3534 to the former (but the fruit is at all stages quite without spines or tubercles); but he puts *C. pubescens*, Willd., to the latter. (Under *C. Melo* he quotes by error C. P. 1104, which is a *Trianthema.*) Good figures of some of the Indian cultivated forms of *C. Melo* and *C. sativus* will be found in Duthie, Crops, tt. 49–54.

The fruit is too bitter to be eaten, but is used in medicine. The plant is never cultivated.

6. **LUFFA,*** *Cav.*

Large annual herbs, stems angled, tendrils 3-fid, l. palmately lobed, fl. large, monœcious, male in long racemes, fem. solitary from same axil; cal.-limb cup-shaped, segm. 5, lanceolate, acuminate; pet. connate for more than half way up, obovate-oblong; male fl.:—stam. 3 or 5, anth. distinct, cells sigmoid; fem. fl.:—cal. contracted above ov., ov. long-oblong, style short, thick, stigmas large; fruit large, ovoid-oblong, fibrous when ripe, not very succulent, 3-celled, indehiscent; seeds numerous, ovoid, compressed.—Sp. 10; 5 in *Fl. B. Ind.*

Stam. 5; fruit not ridged . . . . 1. L. ÆGYPTIACA.
Stam. 3; fruit sharply 10-ridged . . . . . 2. L. ACUTANGULA.

1. ***L. ægyptiaca,** *Mill. Dict.* ed. 8 (1768). **Niyan-wéta-kolu,** *S.* **Pikku, Pichukku,** *T.*

L. cylindrica, Roem., Moon Cat. 66. *L. pentandra*, Roxb., Thw. Enum. 126. C. P. 2805.

Fl. B. Ind. ii. 614. Wight, Ic. t. 499 (*L. pentandra*). Duthie, Crops, t. 63.

Stems very stout, 5-angled, twisted, slightly pubescent,

* *Luffa*, from the Egyptian or Arabian name often spelt 'Loofah.'

young parts more so; l. large, 4–8 in., orbicular in outline, often broader than long, very cordate at base, usually more or less 7-lobed, lobes acute, distantly denticulate, finely scabrous on both sides, petiole 1–3 in., angular, slightly scabrous; male fl. numerous in racemes 4–8 in. long, 1½ in. wide, ped. ¼–½ in., pubescent, with a small fleshy bract near the base bearing 3 or 4 large immersed glands, buds pointed, fem. fl. larger, over 2 in., solitary, on peduncle 3–6 in. long; cal.-segm. lanceolate, acute; pet. obovate-oblong; male fl.:—stam. 5, distinct; fem. fl.:—cal.-tube produced a little beyond ov., ov. oblong, cylindrical, glabrous or pubescent; fruit very large, 6–12 in. or more, cylindrical or somewhat trigonous, not ribbed, blunt at end; seed nearly ½ in., oval, much compressed, narrowly winged, rough on sides, grey.

Low country to 3000 ft.; common in native gardens, but scarcely a wild plant. Fl. July; yellow.

Throughout the Tropics, cultivated.

The young fruits are eaten as a vegetable.

2. **L. acutangula,** *Roxb. Hort. Beng.* 70 (1813). **Weta-kolu, Dara-weta-kolu,** *S.* **Peypichukku,** *T.*

Herm. Hort. Lugd.-Bat. Cat. 482. Fl. Zeyl. n. 352 (part). *Momordica Luffa*, L. Sp. Pl. 1009 (part); Moon Cat. 66. Thw. Enum. 126. C. P. 1624. Fl. B. Ind. ii. 615. Duthie, Crops, t. 62.

Very close to *L. ægyptiaca*, from which it differs in its much more slender stems with sharper angles, rather smaller fl., 3 stams., strongly ridged ov., and in the fruit, which is 6–12 in., clavate-oblong, tapering to base, very obtuse, smooth, longitudinally ribbed or almost winged with 10 sharp angles or ridges, and with the seeds over ½ in., not winged, oblong-ovoid, much compressed, slightly corrugated on sides, black.

Var. β, **amara,** *Roxb.* (sp.). Thw. Enum. 417. C. P. 1623.

Seeds smaller, ⅜ in., more corrugated, black or white.

Largely cultivated in native gardens in the low country, but nowhere wild; var. β in the dry region, possibly a native. Fl. yellow; July.

Throughout the Tropics, but introduced in the New World.

The fruit is much used when half ripe and still succulent for curries and as a vegetable, and is preferred here to *L. ægyptiaca*, but that of var. β is too bitter for use.

Hermann's figure (there is no specimen), called *Momordica cylindrica* by Linn., represents this species, not *L. ægyptiaca*.

Benincasa cerifera, Savi, the 'Ash-Pumpkin' (*Alu-puhul*, S., *Puchini*, T.), is much cultivated by the natives for the fruit, used as a vegetable; is also candied as a sweetmeat. It is grown throughout the Eastern Tropics, and in China and Japan. Figured in Duthie, Crops, t. 45.

7. **CITRULLUS,** *Schrad.*

Annual or perennial, tendrils 2–3-fid., fl. rather large, monœcious, all solitary in the axils; cal.-limb campanulate, segm. 5, narrow; pet. 5, united nearly half way up to form a cup-shaped cor.; male fl.:—stam. 3, small, anth. distinct, cells conduplicate; fem. fl.:—ov. broadly oval, style stout, with 3 small staminodes around it, stigmas 3; fruit rather large, globose, smooth, pericarp hard; seeds numerous, immersed in solid white pulp, oval, compressed, smooth, not winged. —Sp. 2; both in *Fl. B. Ind.*

C. Colocynthis, *Schrad. in Linnæa,* xii. 414 (1838). **Yak-komadu,** *S.* **Peykkomaddi,** *T.*

Moon Cat. 67. Thw. Enum. 126. C. P. 1607.

Fl. B. Ind. ii. 620. Wight, Ic. t. 498. Bentl. and Trim. Med. Pl. t. 114.

Stems long, prostrate, slender, angular, scabrous or sometimes hairy; l. $1\frac{1}{2}$–$3\frac{1}{2}$ in., variable, usually deltoid in outline, very deeply trifid, the middle lobe the longest, each lobe deeply pinnatifid, with the segm. lobed or dentate, margin often involute, nearly glabrous above, very scabrous with short, swollen, prickly bristles beneath, petiole about half length of l., bristly or hairy; fl. rather large, peduncle about $\frac{1}{2}$ in., rough or hairy; cal. hairy, segm. linear-lanceolate; cor.-segm. oval, subacute; ov. globular-ovoid, hairy, placentas very large, filling cavity, style short; fruit globular, slightly depressed, 2 in. diam., smooth, dark green mottled with 10 lines of paler irregular spots, pericarp thin, completely filled with white spongy pulp divided by 6 spurious partitions; seeds horizontal, scarcely $\frac{1}{4}$ in., pale brown.

Dry and desert regions; rather rare. Batticaloa (Gardner); Puttalam (Moon); Jaffna. Fl. January, Feb.; pale yellow.

In India, Arabia, W. Asia, N. and Trop. Africa, and the Mediterranean. The plant is not cultivated in Ceylon, and the fruit above described is that of the wild plant, and differs much in size from the Colocynth obtained from the Mediterranean for pharmaceutical purposes.

C. vulgaris, Schrad., the Water Melon (*Komadu,* S.), indigenous to Trop. Africa, is cultivated in the dry districts. There are figures of 3 varieties in Duthie, Crops, tt. 47, 55, 56.

8. **BRYONIA,** *L.*

Perennial, tendrils bifid, fl. rather small, monœcious, male and fem. in small clusters, in same axils; cal.-limb cup-shaped, segm. 5; pet. 5, united for about $\frac{1}{4}$ way up; male fl.:—stam. 3,

quite distinct, cells sigmoid ; fem. fl.:—ov. globose, glabrous, style slender, 3-fid.; fruit a globose berry, spuriously 3-celled ; seeds not numerous, each surrounded by a pulpy coat, slightly compressed.—Sp. 12; 1 in *Fl. B. Ind.*

B. laciniosa, *L. Sp. Pl.* 1013 (1753).
Herm. Hort. Lugd.-Bat. 95. Burm. Thes. 50. Fl. Zeyl. n. 355. Moon Cat. 67. Thw. Enum. 126. C. P. 1606.
Fl. B. Ind. ii. 622. Burm. l. c. t. 97. Wight, Ic. t. 500.

Root large, tuberous, stems very slender, glabrous, often spotted with darker green, internodes very long; l. 3–5 in., ovate-rotundate in outline, very deeply cordate at base, cut nearly to base into 5 lanceolate or linear acute, coarsely serrate segm., the two basal ones deeply pedate, glabrous, thin, the upper surface slightly rough with minute scattered scales, petiole 1–1½ in.; fl. in small clusters of 3–6, on short ped.; cal.-segm. linear, filiform ; cor.-segm. oval-oblong, acute, pubescent ; fruit globose, over ¾ in. diam., smooth, bluish-green, with broad, white, vertical stripes ; seeds gibbous at the sides, with a prominent raised band running round the edge.

Moist country up to 6000 ft.; common. Fl. Aug.–Oct.; very pale yellow.

Throughout the Eastern Tropics.

There is no specimen in Hermann's Herb. I have no Sinhalese name for this, Burman gives 'Basuagilli.' Hermann l. c. says it is used as a cathartic.

9. MUKIA, *Arn.*

Perennial, tendrils simple, fl. small, monœcious, male and fem. together in axillary clusters; cal.-limb campanulate, with 5 linear segm., pet. very slightly connate ; male fl.:—stam. 3, distinct, anth.-cell straight ; fem. fl.:—ov. ovoid, style thick, surrounded at base by annular disk, placentas usually 2 ; fruit a globose berry, spuriously 2-celled; seeds ovoid, somewhat compressed.—Sp. 2; both in *Fl. B. Ind.*

Cogniaux places this under *Melothria.*

L. scabrous beneath ; seeds tuberculated on sides . 1. M. SCABRELLA.
L. softly hairy beneath ; seeds smooth . . . 2. M. LEIOSPERMA.

1. **M. scabrella,** *Arn. in Hook. Journ. Bot.* iii. 276 (1841). **Hiṅkékiri,** *S.* **Mochumochukkai,** *T.*
Fl. Zeyl. n. 356. *Cucumis maderaspatanus*, L., Sp. Pl. 1012. Thw. Enum. 125. C. P. 1616.
Fl. B. Ind. ii. 623. Wight, Ic. t. 501.

Stems long, slender, much branched, angular, very hispid with spreading bristly hairs, young parts covered densely with

white hair; l. variable in size, usually 3–4 in., but often only 1 in. or less, deltoid-ovate, very deeply cordate at base, with a wide sinus, and the rounded lobes often overlapping, acute or obtuse at apex, rather shallowly 5-lobed, coarsely dentate-serrate, usually scabrous with stiff hairs on both sides, petiole fully half as long as l., cylindrical, very hispid; fl. very small, male on pilose ped. as long as cal., fem. nearly sessile; cal. hairy, segm. linear, pet. ovate, ciliate, a little longer than cal.-segm.; berry about ½ in., broadly ovoid, apiculate, with a few scattered hairs, scarlet; seeds horizontal, closely packed, oval, compressed, bluntly muriculate on the sides, enveloped in a pulpy envelope.

Low country up to 3000 ft.; common. Fl. all the year; yellow. Fruit scarlet.

Tropics of the Old World generally.

In the dry region this is often extremely harsh and hispid, but Hermann's original specimens have glabrous leaves, as described by Linnæus; the scabrous-leaved specimens were calle l *Bryonia cordifolia* by him (see under *Cephalandra*). Leaves used as an expectorant.

M. leiosperma, *Wight, ex Roem. Synops.* iii. 46 (1846).
Thw. Enum. 125. C. P. 2700.
Fl. B. Ind. ii. 623.

Stems slender, hispid, young parts densely and softly villous-hairy; l. 1½–3 in., broadly cordate-ovate, acute, slightly 3- or 5-lobed, strongly dentate, harshly hairy or scabrous above, densely and softly hairy beneath, petiole short, ¼–¾ in., hispid-hairy; fl. on slender hairy ped.; cal. very shaggy with long hair; pet. hairy outside; ov. thickly covered with very long hair; fruit under ½ in., globose, very slightly hairy; seed rather larger than in *M. scabrella*, less compressed, smooth on the sides, conspicuously bordered.

Montane zone, 4000–5000 ft.; very rare (?) Only found in Maturata. Fl. Aug.

Also in S. India.

I have not met with this living. It is very near *M. scabrella.*

10. ZEHNERIA, *Endl.*

Annual or perennial, tendrils simple, fl. monœcious or diœcious, the male in racemes, the fem. solitary; cal.-limb campanulate, segm. 5, small; pet. 5, very slightly connate at base; male fl.:—stam. 3, inserted low down in cal., anth. distinct, small, cells slightly curved; fem. fl.:—cal.-tube much constricted above ov. into a narrow neck, placentas 3, style surrounded at base by a lobed disk and 3 erect staminodes;

fruit globose or ovoid, pulpy; seeds numerous, ovoid, smooth.—Sp. 15; 3 in *Fl. B. Ind.*

Cogniaux includes this under *Melothria.*

L. slightly cordate; fl. monœcious; fruit globular. 1. Z. HOOKERIANA.
L. very deeply cordate at base; fl. diœcious; fruit narrowly ovoid . . . . 2. Z. HASTATA.

1. **Z. Hookeriana,** *Arn. in Hook. Journ. Bot.* iii. 275 (1841).
Melothria perpusilla, Cogn. l. c. 607. Thw. Enum. 125. C. P. 1613.
Fl. B. Ind. ii. 624. Wight, Ic. t. 758 (*Bryonia maysorensis*).

Stems slender, cylindrical, glabrous, l. $1\frac{3}{4}$–$2\frac{1}{4}$ in., broadly ovate, subcordate or nearly truncate at base, acuminate, acute at apex, distantly dentate, thin, slightly rough above with minute flat scales, paler and quite glabrous beneath, petiole $\frac{3}{4}$–$1\frac{1}{4}$ in.; fl. monœcious, male 3–6, pedicellate, in short stalked racemes, fem. shortly stalked from same axils; cal.-segm. very short, setaceous; pet. ovate, acute, slightly hairy within; ov. globose, style 3-fid; fruit $\frac{3}{8}$ in., globose, smooth, crimson; seeds 30–40, ovoid, very much flattened, smooth.

Moist region, 2000–4000 ft.; common. Fl. Jan.; pale yellow.
Also in India and Java.
Cogniaux calls the Ceylon plant var. *subtruncata.*

2. **Z. hastata,** *Miq. Fl. Ind.-Bat.* i. pt. 1, 656 (1855). **Kawudu-kekiri,** *S.* **Peyppudal,** *T.*
Bryonia umbellata, Moon Cat. 67. *Z. umbellata,* Thw. Enum. 125; Trim. Syst. Cat. 38. C. P. 1619, 3506.
Fl. B. Ind. ii. 625 (*Z. umbellata*). Rheede, Hort. Malab. viii. t. 26.

Root with pendulous tubers, stems very long, slender, angular, glabrous, tendrils very long, young parts puberulous; l. 3–4 in., very variable, usually triangular-ovate, with a cordato-hastate base, the lobes often overlapping, but sometimes prolonged into oblong or even linear divaricate lobes, acute, distantly denticulate, slightly rough with scales and bright green above, smooth and glaucous beneath, scabrous on margin, petiole $\frac{1}{2}$ in., cylindrical, twisted; fl. diœcious, male on slender ped., numerous, crowded in a close, umbellate, pedunculate corymb much shorter than l., fem. solitary; cal.-segm. minute; pet. very short, triangular; ov. glabrous, 10-ribbed, style stout, stigmas very large; fruit about $1\frac{1}{2}$ in., oblong-ovoid, cylindrical, tapering to a point but not beaked, smooth, red; seeds ovoid, scarcely compressed, smooth, white.

Moist low country; very common. Fl. June, July; yellowish-white.
Throughout Tropical Asia.
Extremely variable in the shape of the leaves. Cogniaux distinguishes

12 forms. In C. P. 3506 they are very deeply trifid with oblong-linear diverging segments.

The name 'Telaberiya,' S., has also been given me for this.

11. MELOTHRIA, *L.*

Tendrils simple, fl. monœcious, male and fem. often from same axils, cal.-limb campanulate, segm. 5, setaceous, pet. 5, very slightly connected; male fl.:—stam. 3, inserted in middle of cal.-limb, fil. short, anth. distinct, connective wide, produced into a point, cells nearly straight; fem. fl.:—ov. with 3 placentas, style rather long, surrounded at base with annular disk and 3 staminodes; fruit fusiform, beaked; seeds numerous, small, much compressed, smooth.—Sp. 25; 5 in *Fl. B. Ind.*

M. zeylanica, *Clarke in Fl. B. Ind.* ii. 626 (1879).
Bryonia deltoidea, Arn. Pug. 19. *Æchmandra deltoidea*, Arn. in Hook. Journ. Bot. iii. 274. *M. deltoidea*, Thw. Enum. 124 (non Benth.). Cogn. l. c. 595. C. P. 2581, 3128, 1610.
Fl. B. Ind. ii. 626.

Stems very slender, striate, glabrous; l. $1\frac{1}{2}$–3 in., deltoid or triangular, with a wide, truncate and often hastate base, without other lobes, acuminate, distantly denticulate, more or less scabrous with white scales above, smooth or slightly hairy on veins beneath, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., slender; fl. on long slender ped., 1–4 from axil; cal. very hairy at the throat, segm. recurved; pet. oval, puberulous, spreading; fem. fl.:—ov. fusiform, the cal.-tube prolonged above it into a very narrow long neck; fruit $1\frac{1}{4}$–$1\frac{1}{2}$ in., much tapering to both ends, cylindrical, with a sharp point or beak, and 6 slight vertical ridges, green; seeds horizontal, very much compressed, smooth, whitish.

Moist region; rare in the low country, common in the montane zone up to 7000 ft. Fl. Jan.–April; cream-coloured.
Endemic.

12. RHYNCHOCARPA, *Schrad.*

Annual, tendrils simple, fl. monœcious, very small, male in slender racemes, fem. solitary; cal.-limb campanulate, segm. 5, subulate; pet. 5, spreading, connate into a rotate cor.; male fl.:—stam. 3, inserted in cal.-limb, anth. distinct, connective slightly prolonged, cells straight; fem. fl.:—ov. ovoid, beaked, no disk, stigmas 2 or 3; fruit ovoid, strongly beaked; seeds few, smooth, narrowly winged.—Sp. 5; 1 in *Fl. B. Ind.*

Cogniaux sinks this Genus under *Kedrostis*, Medik.

R. rostrata, *Naud. in Ann. Sc. Nat.* 4, xvi. 177 (1862).
Fl. B. Ind. ii. 627 (*R. fœtida:* not given for Ceylon).

Stems prostrate, hairy; l. small, 1–1½ in., orbicular-ovate, cordate at base, acute, coarsely dentate, closely pubescent on both sides, petiole ¼ in., hairy; male fl. very small, on long filiform ped., racemes corymbose, much shorter than l.; fem. nearly sessile; cal. and pet. pubescent; fruit ¾ in. or rather more, ovoid, tapering into a long narrow beak, red, densely covered with long white hair; seeds ovoid, gibbous on sides, with a narrow sharp wing, smooth, brown.

Dry region; very rare. Collected in 1890 near the Giant's Tank, Mannar District. Fl. Feb.

Also in S. India.

Combined with *R. fœtida*, Schrad., a common African plant, in Fl. B. Ind.

13. CORALLOCARPUS, *Welw.*

Perennial, tendrils simple, fl. small, monœcious, male in small long-stalked corymbs, fem. solitary or two together; cal.-limb campanulate, segm. very small; pet. 5, very slightly connected at base; male fl.:—stam. 3, inserted at mouth of cal.-limb, fil. very short, anth. distinct, cells straight, connective not produced; fem. fl.:—ov. ovoid, usually 2-celled, style long, stigma large, 2-lobed; fruit ovoid, beaked, succulent, circumscissile near the base; seeds few, ovoid, slightly compressed.—Sp. 15 (Cogniaux); 3 in *Fl. B. Ind.*

C. epigæus, *Clarke in Fl. B. Ind.* ii. 628 (1879). **Gopalanga,** *S.*
Æchmandra epigæa, Arn., Thw. Enum. 125. C. P. 1622.
Fl. B. Ind. ii. 628. Wight, Ic. t. 503.

Root very large, turnip-shaped, stem rather succulent, prostrate, zigzag, glabrous, glaucous; l. rather small, 1–1½ in., rotundate, very cordate at base, more or less 3- or 5-lobed, with obtuse or acute, irregularly dentate lobes, shortly and roughly pubescent on both surfaces, rather thick, petiole more than half length of l., stout, glabrous; male fl. very small, on short ped., peduncle 1½–2½ in., straight, stiff, fem. larger; fruit ¾–1 in., ovoid, with a blunt beak, smooth, scarlet in middle, with base and beak green, dehiscent by a circular line at junction of red and green portions near base; seeds about 9, in orange-coloured pulp, very slightly compressed, pale brown, adpressed-pilose.

Dry country; rather common. Uma-oya; Dambulla; Mannar. Fl. Jan.–March; yellowish-green.

Also in dry parts of India.

14. **CERASIOCARPUM,*** *Hk. f.*

Perennial, tendrils simple, fl. monœcious, male in small racemes, fem. solitary, often from same axil; cal.-limb campanulate, segm. 5, very small; pet. 5, slightly connate at base; male fl.:—stam. 3, inserted at mouth of cal., distant, anth. dorsifixed, cells straight, those of the 2-celled ones far apart, connective broad, not produced; fem. fl.:—ov. with 2 placentas and 4–6 ovules, style long, stigma 3-lobed, no staminodes; fruit depressed-globose, pulpy; seeds 3–6, large, ovoid, with a narrow border, surrounded by orange pulp.—Monotypic.

C. zeylanicum, *Clarke in Fl. B. Ind.* ii. 628 (1879). [PLATE XLIV.]

Æchmandra zeylanica, Thw. Enum. 125. *C. Bennettii*, Cogn. l. c. 729. C. P. 3002, 3500.

Fl. B. Ind. ii. 628.

Stems cylindrical, slender, glabrous; l. 3–4 in., ovate-oblong, cordate at base, often hastate or with short spreading basal lobes, shortly acuminate, margin entire or coarsely sinuate, distantly denticulate, rough above with few distant coarse prickly hairs, paler and glabrous beneath, thin, petiole about ½ in.; fl. on short slender ped.; cal.-segm. minute, setaceous; pet. ovate, acute or obtuse, pubescent; male fl.:—fil. extremely short, hairy; fem. fl.:—ov. globose, glabrous; fruit ⅝ in. wide, depressed-globose, smooth, bright orange red; seeds ¼ in. or more, ovoid, scarcely compressed, with a blunt crest at one end and a narrow blunt rim round the edge, finely pilose, brown or white.

Lower montane zone; rather rare. Hantane; Medamahanuwara; Watagoda. Fl. November; pale yellow.

Also in Java and Sumatra, and perhaps in S. India.

The leaves are very like those of *Trichosanthes nervifolia.*

15. **CTENOLEPIS,** *Hk. f.*

Annual, tendrils simple, fl. monœcious, minute, male in very short racemes, fem. solitary from the same axils; cal.-limb campanulate, short, segm. 5, subulate; pet. 5, connate below; male fl.:—stam. 3, anth. distinct, cells straight; fem. fl.:—ov. globose, slightly depressed, style long, no disk; fruit small, depressed-top-shaped, 1- or 2-seeded; seed oblong-ovoid, compressed, bordered.—Sp. 2; both in *Fl. B. Ind.*

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* From the cherry-like fruit.

C. Garcini,* *Clarke in Fl. B. Ind.* ii. 629 (1879). **Mochu-mochukay,** *T.*

Sicyos Garcini, Burm. f. Fl. Ind. 211. *Zehneria Garcini*, Stocks, Thw. Enum. 125. *Blastania Garcini*, Cogn. l. c. 629. C. P. 1611.

Fl. B. Ind. ii. 629. Burm. f. Fl. Ind. t. 57, f. 3 (bad).

Small, prostrate, stems slender, much branched, glabrous; l. rotundate in outline, small, 1–2 in., palmately cut more than $\frac{3}{4}$ down into 5 obovate or wedge-shaped obtuse lobes, strongly dentate-serrate, slightly scabrous-hairy on both sides, petiole $\frac{1}{2}$–1 in., bearing in its axil a stipule-like, large, cordate or reniform bract fringed with very long filiform cilia; fl. extremely small, male racemes very short, concealed by the bract, pubescent; pet. oblong, reflexed; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., wide, flat-topped, smooth, orange; seeds slightly curved.

Dry country; rather rare. Jaffna; Matalan, E. Prov. (Nevill); Tissamaharama, S. Prov. Fl. Dec.–February; white.

Also in Southern India.

The original locality where Garcin collected this seems to have been Tuticorin, not Ceylon, though 'Zeylona' is the locality given. Burm. f. mistook the pectinate bracts for fruit.

Used by the Tamils as a medicine in quinsy and other affections of the throat.

16. GYNOSTEMMA, *Bl.*

Perennial, tendrils bifid, l. compound, fl. diœcious, very small, in lax panicles; cal.-segm. 5, small; pet. 5, very acuminate; male fl.:—stam. 5, fil. connate into a column, anth. quite distinct, cells straight; fem. fl.:—ov. globose, 3-celled, with 2 pendulous ovules in each cell, styles 3, spreading, bifid; fruit a small berry, 1–3-seeded; seed large, worted, furrowed round edge, not compressed.—Sp. 5 (Cogniaux); 1 in *Fl. B. Ind.*

G. laxa, *Cogn. Monog. Phan.* iii. 914 (1881). [Plate XLV.]

Zanonia Wightiana, Arn. Pug. 386. *Pestalozzia laxa*, Thw. Enum. 124. *G. pedata*, Trim. Syst. Cat. Ceyl. Pl. 38 (? Bl.). C. P. 2582.

Fl. B. Ind. ii. 633 (*G. pedata*).

Stems very long, sometimes slightly woody below, slender, cylindrical, glabrous and shining; l. 3-foliolate, petiole 1–1$\frac{1}{2}$ in, stout, furrowed above, often twisted and sub-prehensile, glabrous, lflts. 2–4 in., shortly stalked, lanceolate, acute, coarsely serrate, glabrous, rather thick, the middle one rather the largest, the lat. ones either dilated on lower side or

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* Laurent Garcin collected in S. India at the beginning of the 18th century, and his plants are in Burman's Herbarium. He may have also visited the North of Ceylon. Died 1752.

divided pedately into another lflt.; fl. very small (male a little larger), very numerous, on slender ped., arranged in peduncled, elongated, pyramidal, lax, spreading, pubescent panicles, in the fem. about as long as l., in the male often very much longer; cal.-segm. ovate, acute; pet. linear-lanceolate, much attenuate-acuminate, spreading; fruit about $\frac{1}{4}$ in., globose, smooth, dull black; seeds 1–3, in dark green pulp, rather large, $\frac{1}{8}$–$\frac{1}{6}$ in., globose-trigonous, slightly compressed, furrowed on edge, wrinkled and worted on sides, dark chestnut-brown.

Montane zone, 3000–6000 ft.; rather common. Abundant at Hakgala. Fl. Feb., Oct.; yellowish-green.

Also in Assam, Khasia, Sumatra, Java.

Clarke combines this with *G. pedata*, Bl., but Cogniaux distinguishes it by its narrower pet. and trifoliolate l.; but the latter are occasionally pedate in our plant.

17. **ZANONIA,** *L.*

Perennial, semi-woody, tendrils simple, fl. diœcious, male in panicles, fem. in racemes; cal.-segm. 3, valvate (no cal.-limb); pet. 5, connate below to form a rotate cor., imbricate; male fl.:—stam. 5, inserted on central disk, distinct, anth. 1-celled, opening transversely; fem. fl.:—staminodes 5, short, ov. narrowly turbinate, cylindrical, at first 3-celled (afterwards 1-celled), with 2 pendulous ovules on each cell, styles 3, spreading, bifid; fruit a truncate capsule, opening on summit by 3 valves; seeds very few (often 6), large, ovoid, much compressed, surrounded by a very wide wing much prolonged at each end, embryo large, with flat fleshy cotyledons.—Sp. 2; 1 in *Fl. B. Ind.*

Z. indica, *L. Sp. Pl.* ii. 1457 (1768). **Wal-rasakinda,** *S.*
Moon Cat. 68. Thw. Enum. 124, 442. C. P. 1628.
Fl. B. Ind. ii. 634. Wight, Ill. t. 103.

Stems stout, cylindrical, semi-woody, grey, glabrous; l. large, 3–6 in., deciduous, leaving a very prominent circular scar, broadly oval to lanceolate, rounded or cordate at base, somewhat acuminate, apiculate, quite entire, glabrous, rather thick, reticulate venation rather conspicuous beneath; fl. rather small (fem. much the larger), on short ped., male panicles 6–12 in. long, branched chiefly at base, with fl. in small clusters, fem. racemes longer, with fl. solitary, distant; cal.-segm. rotundate, concave, glabrous; pet. ovate, acuminate, obtuse, with incurved points; male fl.:—fil. short, broad, spreading; fem. fl.:—ov. $\frac{1}{2}$ in., glabrous, styles rather long;

capsule 1–1½ in. or more, cylindrical, rounded at base, truncate at apex, glabrous, pale yellowish-brown; seed with wing as long as fruit, very flat, glabrous, yellow, wing rounded at the ends.

Moist low country up to 2000 ft.; rather rare. Kaduganawa; Kurunegala; Ambagamuwa. Moon's locality is Kalutara. Fl. June; greenish-yellow.

Also in India and Malaya.

Has much the aspect of a *Menispermacea*, as its S. name indicates.

LIX.—BEGONIACEÆ.

PERENNIAL succulent herbs, l. alt., with stip., fl. unisexual, monœcious; male fl.:—perianth-segm. 2 or 4, in pairs, outer pair valvate, inner pair (when present) smaller; stam. indef. (30–50), usually somewhat monadelphous; fem. fl.:—perianth-segm. 2–5; ov. quite inferior, 3-celled with very numerous ovules crowded on axile placentas, styles 3, distinct or slightly connate; fruit a triangular papery capsule, winged at the angles, opening by an elliptical slit on each face; seeds minute, very numerous, with scanty endosperm.

This curious Family is very poorly represented in Ceylon. Of our species, 2 are confined to the moist low country and 2 to the montane zone, whilst one occurs in both.

BEGONIA, *L.*

For characters, see Order.—Sp. 398; 64 in *Fl. B. Ind.*

Stemless.
  Placentas 2-lobed . . . . 1. B. CORDIFOLIA.
  Placentas undivided.
    L. rounded or subacute at apex . . . 2. B. TENERA.
    L. acuminate.
      Scapes and ov. very hairy . . . . 3. B. THWAITESII.
      Scapes and ov. nearly glabrous . . . 4. B. SUBPELTATA.
Stem stout, erect . . . . 5. B. MALABARICA.

1. **B. cordifolia,** *Thw. Enum.* 129 (1859). **Gal-ambala,** *S.*
C. P. 3584.
Fl. B. Ind. ii. 641. Wight, Ic. t. 1816 (*Diploclinium cordifolium*).

A perennial herb with a short horizontal rootstock, sending up leaves and flower-stalks; l. erect or spreading, petiole 3–7 in., stout, succulent, with spreading hair, pink, blade

3–6 in., ovate-rotundate, strongly cordate with the lobes nearly equal at base, acute or obtuse at apex, very slightly lobed, crenate-dentate, unequal-sided, thin, sparingly hairy on both sides, bright light green, stip. ovate-lanceolate, acuminate, glabrous; scapes 4–6 in., erect, succulent, hairy, pink, slightly bifurcate at top; fl. $\frac{3}{8}$–1$\frac{1}{4}$ in., male and fem. usually on separate scapes, ped. of male fl. $\frac{1}{2}$–1 in., filiform, of fem. fl. shorter and stouter, bracts small, ovate, acute; male fl.:—per.-segm. 4, the outer pair rotundate, cordate at base, inner narrowly oblong, stam. about 30, fil. monadelphous below; fem. fl.:—per.-segm. 3–5 (usually 5), the 2 outer rotundate, the 3 inner oval-oblong, ov. with bifid placentas, shortly 3-winged, glabrous, style deeply divided into 3 stout curved branches, each bilobed at end; capsule very thin and papery, dehiscent on the three sides, wings nearly equal, variable in width, upper margin rounded; seeds broadly ovoid, ridged, dark brown.

Low country to about 1500 ft.; very rare. In plenty in crevices of wet rocks near Lunugala, Bibile, and Nilgala, Uva Prov. Fl. Jan.–March; white.

Also in S. India.

A. DC. (Prod. xv. pt. 1, 329) calls the Ceylon plant var. *insularis*.

2. **B. tenera,** *Dryand. in Trans. Linn. Soc.* i. 169 (1791).

B. rupestris, Moon Cat. 64 (?). *B. Thwaitesii*, Hk., Thw. Enum. 128 (part). C. P. 3952, 2808 (part).

Fl. B. Ind. ii. 652. Trans. Linn. Soc. i. t. 16.

Stemless, with a stout prostrate rhizome; l. 2$\frac{1}{2}$–4 in., rotundate, very strongly cordate and slightly unequal at base, rounded or subacute at apex, faintly serrate-crenate, hairy on both sides, thin, petiole 3–6 in., hairy, succulent, stip. ovate, acuminate, somewhat fleshy; scapes 3–9 in., erect, stiff, hairy; fl. few, umbellately corymbose, on slender ped., the male erect, the fem. drooping, bracts ovate, acute; male fl.:—per.-segm. 4, 2 outer rotundate, cordate, hairy outside, 2 inner oval-oblong, stam. 40–50, fil. connate at base; fem. fl.:—2 outer per.-segm. broad, 3 inner narrow, ov. very hairy, placentas undivided, styles 3, distinct almost to base, stigmas bilobed; capsule $\frac{3}{8}$ in. by $\frac{5}{8}$ in. wide (with wings), glabrous, wings nearly equal, their upper margins nearly straight, forming a sharp angle (or slightly rounded) with sides.

Moist low country; rare. First collected by Kœnig, but he does not give any locality. Near Bulat-Singhale, Pasdun Korale (Thwaites); Wellawaya (F. Lewis). Fl. Sept.; white.

Endemic.

Dryander gives in full Kœnig's description from his MSS.; and the figure is taken from his specimen in the Mus. Brit.

3. **B. Thwaitesii,** *Hook. Bot. Mag.* 4692 (1853).
Reichenheimia Thwaitesii, Klotzsch, Begon. 55. Thw. Enum. 128 (part). C. P. 3953, 2808 (part).
Fl. B. Ind. ii. 652 (under *B. tenera*). Bot. Mag. t. 4692; Klotzsch, l. c. t. 4 A.

Differs from *B. tenera* in having l. much more unequal at base, acuminate and more acute at apex, more or less mottled with purple above and with the veins dark purple instead of white; petioles and scapes much more hairy, even shaggy, with red hair; capsules longer, $\frac{1}{2}$–$\frac{5}{8}$ in.

Lower montane zone, 3000–4000 ft.; rare. Kotmale (Gardner); Matale; Hunasgiriya. Fl. Sept.–January; pale cream-coloured.
Endemic.
The leaves are usually beautifully mottled and variegated with coppery-red, purple and green above, and entirely purple beneath.

4. **B. subpeltata,** *Wight, Ic.* v. 2, 9 (1852).
Thw. Enum. 128. C. P. 2597.
Fl. B. Ind. ii. 653. Wight, Ic. t. 1812.

Differs from *B. tenera* in having l. more acuminate, somewhat lobed and more finely hairy; scapes longer and nearly glabrous; flowers larger; ov. quite glabrous.

Lower montane zone; very rare. Ambagamuwa (Thwaites). Fl. March; white.
Also in S. India.
The leaves are not at all subpeltate in Ceylon specimens.
The last two species and this are all very closely allied, and are probably only varieties of one. C. P. 346 (see Thw. Enum. 129) from Hiniduma (without flowers), with leaves covered with dense red pubescence, is probably another species or variety of the same series, but it has a larger rootstock and the leaves are less unequal at the base.

5. **B. malabarica,** *Lam. Encycl.* i. 393 (1783). **Hakambala,** *S.*
Moon Cat. 64. *B. dipetala*, Graham in Bot. Mag. t. 2849. Thw. Enum. 128. C. P. 2807, 3949.
Fl. B. Ind. ii. 655. Bot. Mag. t. 2849. Wight, Ic. t. 1813.

Stem erect, 2–3 ft., cylindrical, stout, zigzag, thickened at the nodes, glabrous, branched; l. 4–6 in., numerous, extremely unequal-sided, the large side deeply $\frac{1}{2}$-cordate at base, the other simply rounded, very acuminate, acute, sharply spinous-serrate and sometimes coarsely incised, slightly scabrous above or glabrous, paler or purplish, shining and glabrous beneath, petiole succulent, cylindrical, stip. over $\frac{1}{2}$ in., lanceolate, acute, membranous, deciduous; fl. rather large, on long, slender, glabrous, drooping ped.; per.-segm. 2, orbicular, much broader than long; male fl.:—stam. above 40, fil. connate at very base; fem. fl.:—ov. quite glabrous, placentas undivided, styles 3, dilated and undulate at ends; fruit very light and

papery, pendulous, near 1 in., pale brown, shining, wings slightly unequal, broad, with upper margin either straight, or completely rounded off without an angle.

Moist region, up to 5000 ft.; rather common in wet rocky places, especially above 3000 ft. Ritigala, N.C. Prov. (Bell). Fl. all the year; rose-pink or nearly white.

Also in Malabar.

Variable, but not divisible into distinct varieties. I find the angled and rounded wings in fruits on the same plant. C. P. 3949 (from Matale) has narrow rounded wings and deeply gashed leaves.

LX.—DATISCACEÆ.

TREE, l. alt., simple, without stip., fl. small, unisexual, diœcious in panicles, apetalous; male fl.:—cal. deeply cut into 4 segm.; pet. 0; stam. 4, opp. cal.-segm., inserted round a flat central disk; fem. fl.:—cal.-tube connate with ov., segm. 4, short; pet. 0; ov. quite inferior, 1-celled, with numerous ovules on 4 parietal placentas, styles 4, distinct, persistent; capsule small, ovoid, opening at summit; seeds minute, flattened, with a very loose testa, with endosperm.

There are only 2 other genera in this small Order.

TETRAMELES, *Br.*

For characters, see Order.—Monotypic.

T. nudiflora, *R. Br. in Benn. Pl. Jav. Rar.* 79 (1838). **Nigunu, Mugunu,** *S.*

Thw. Enum. 252. C. P. 3113.

Fl. B. Ind. ii. 657. Wight, Ic. t. 1956 (*T. Grahamiana*). Bedd. Fl. Sylv. t. 212.

A very large tree, with a straight trunk, unbranched below and buttressed at the base, bark smooth, grey, fibrous, twigs marked with scars of past leaves, young parts puberulous; l. alt., large, 6–7 in., ovate, strongly cordate at base, acuminate, acute, irregularly dentate, in upper part, bright green and glabrous above, paler and with prominent, yellow, softly hairy, reticulate venation beneath, petiole 4–6 in., cylindrical, pubescent; fl. numerous, panicles many, from the base of the new growth below the young l., 6–10 in., stalked, slender, hairy; male with spreading branches and fl. on slender ped.,

fem. with erect branches and sessile fl.; male fl.:—cal.-segm. linear-oblong, glabrous, stam. spreading, fil. much longer than cal.; fem. fl.:—ov. faintly 8-ribbed, slightly pubescent, styles much exserted, stigmas club-shaped; fruit a little over $\frac{1}{4}$ in., urceolate, truncate, 8-ribbed, slightly rough.

Forests in low country to 3000 ft.; rare. Ambagamuwa and Maskeliya (Thwaites); Maha-oya, Batticaloa Dist. (A. Walker); Kegalla; Lagalla Dist.; Allagalla. Fl. March; September; yellowish-green.

Also in W. India, Sikkim, Burma, Andamans, Java.

Attains 14 ft. in circumference of trunk, and is completely deciduous and quite bare when in flower. Wood very soft and light, pale yellow.

LXI.—CACTACEÆ.

SUCCULENT, leafless perennial, fl. bisexual, regular; cal.-tube adnate to ov., segm. 4 or 5; pet. 5 or 6; stam. about 20, free, inserted at mouth of cal.; ov. quite inferior, 1-celled (incompletely 3- or 4-celled), with numerous ovules on parietal placentas, style simple, stigma 3- or 4-lobed; fruit a succulent berry; seeds few, oblong, without endosperm.

A large Order confined to the New World with the exception of a few species of *Rhipsalis*. *R. Cassytha* alone reaches Asia.

RHIPSALIS, *Gaertn.*

For characters, see Order.—Species about 40; 1 in *Fl. B. Ind.*

R. Cassytha,* *Gaertn. Fruct.* i. 137 (1788). **Wal-nawahandi,** *S.*
Cactus pendulus, Willd., Moon Cat. 38. Thw. Enum. 129. C. P. 2976. Fl. B. Ind. ii. 658. Bot. Mag. t. 3080.

Perennial, slightly woody at very base, stems fleshy, slender, 4–6 ft. long, pendulous, cylindrical, much dichotomously (or 3- or more) branched, very flexible, glabrous, dull green, l. quite absent but represented on the young shoots by very minute, distant, apiculate scales; fl. small, sessile, solitary; cal.-segm. unequal, broad, acute; pet. oblong, obtuse, spreading; ov. glabrous, style longer than stam.; berry small, $\frac{1}{4}$ in., ovoid, white, smooth, translucent, at first crowned with persistent cal. and pet.; seeds 8–16, in watery pulp, very small, oblong-ovoid, faintly striate.

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* From its resemblance to that genus of *Lauraceæ*, to which, indeed, Aiton and Miller had referred it.

Epiphytic on the trunks of trees, also on rocks, in the moist region up to 4000 ft.; common. Fl. Aug., Sept.; greenish-white.

Also in Mauritius, Madagascar, Trop. Africa, W. Indies, and Trop. America; but nowhere else in Asia. It is, however, without doubt a native in Ceylon.

Sometimes called 'Mistletoe' by the English in Ceylon, from a slight resemblance in general appearance and berries to *Viscum album* of Europe; but it is not truly parasitic, having very long fibrous roots, which spread over the surface of the wood or rock on which the plant grows. When quite young, the plant is set with stellate tufts of bristles.

Opuntia Dillenii, Haw., is the common 'Cactus' met with on waste ground and by roadsides in the low country, rarely in the moist region, but in great abundance near the coast in the dry; called 'Katu-patuk' by the Sinhalese and 'Naka-kalli' by the Tamils. It is figured in Wight, Ill. t. 114, and is an old introduction, now quite naturalised, and indeed a great nuisance in parts of the Northern Prov. The plant is S. American in origin. No other species is naturalised here.

LXII.—FICOIDEÆ.

ANNUAL or perennial herbs, l. simple, opp. or alt., without stip., fl. small, regular, bisexual, usually apetalous, sep. 5, distinct or more or less connate (in *Sesuvium* slightly adnate to ov.), pet. 0 (rarely 5); stam. def. or indef., perigynous or hypogynous; ov. superior or nearly so, 2–5-celled, with few or numerous ovules in each cell (in *Gisekia* of 5 separate carp. each with 1 ovule); fruit a thin capsule, transversely or loculicidally dehiscent (in *Gisekia* separate cocci); seed more or less reniform, embryo curved round the farinaceous endosperm.

A somewhat ill-defined Order. The 2 first genera are allied to *Portulacaceæ*; *Mollugo* to *Caryophyllaceæ*; and *Gisekia* to *Phytolaccaceæ*.

Stam. inserted on cal.-tube (*Aizoideæ*).
- Styles 3 . . . . 1. SESUVIUM.
- Styles 1 or 2 . . . . 2. TRIANTHEMA.

Stam. hypogynous (*Mollugineæ*)
- Fruit a loculicidal capsule . . . . . 3. MOLLUGO.
- Fruit of separate carpels . . . . . . 4. GISEKIA.

Eleven species, all found in low country only, and usually weeds. *Sesuvium* is a seashore plant.

1. **SESUVIUM**, *L.*

A fleshy prostrate herb, l. opp., without stip., fl. solitary, axillary; cal.-tube very short, adnate to base of ov., segm. 5,

coloured, persistent; pet. 0; stam. indef. (about 30), inserted on cal.-tube; ov. nearly superior, 3-celled, with several ovules in each cell, styles 3, distinct; fruit a membranous, 3-celled capsule, circumscissile near the base; seeds few, reniform, smooth, embryo curved into a ring.—Sp. 4; 1 in *Fl. B. Ind.*

S. Portulacastrum, *L. Syst. Veg.* ed. 10 (1759). **Vaṉkiru-valai,** *T.*

S. pedunculatum, Pers., Moon Cat. 39. *S. repens*, Rottl., Thw. Enum. 23. C. P. 1098.

Fl. B. Ind. ii. 659 (not given for Ceylon). Hk. Comp. Bot. Mag. ii. t. 23 (*S. repens*).

Herbaceous, stems prostrate or buried in the sand, copiously rooting at the nodes, stout, glabrous, succulent, much branched; l. numerous, opp., 1–1½ in., spathulate-oblong or linear, very fleshy, tapering to base, obtuse, glabrous, petiole short, much dilated and amplexicaul at base with broad scarious margins (adnate stip.?); fl. nearly ½ in., solitary, ped. as long as cal., glabrous; cal. glabrous, segm. lanceolate, cuspidate; stam. shorter than cal.; capsule shorter than and enclosed in persistent cal.-segm., pointed; seeds smooth and polished, black.

Sandy seashores; rather rare. Trincomalie (Gardner); Mannar; Karativu; Colombo (Moon); Chilaw; Tangalle. Fl. Jan. Feb.; pink.

Most Tropical and Sub-tropical coasts. Moon gives the Siṉhalese name as ‘Maha-sarana.’ The leaves are eaten in curries.

The figure quoted (of the Carnatic plant) shows much shorter leaves, and is generally smaller than our plant.

2. TRIANTHEMA, *L.*

Herbs with prostrate branches, l. opp. or alt., without stip. but petioles dilated at base, fl. small, axillary; cal.-tube long or short, not connate with ov., segm. 5; pet. 0; stam. 5, 10, or 20 inserted at top of cal.-tube; ov. quite superior, 1 or 2-celled, with few basal ovules, style 1 or 2; fruit a capsule, membranous below, with a hard thick cap which is detached by a transverse dehiscence and carries away with it one or more seeds; seeds few, reniform, embryo curved into a ring. —Sp. 10; 5 in *Fl. B. Ind.*

Style 1.
- L. obovate; capsule about 8-seeded . . . . 1. T. MONOGYNA.
- L. linear-lanceolate; capsule 2-seeded . . . . 2. T. TRIQUETRA.

Styles 2; capsule 4-seeded. . . . . 3. T. DECANDRA.

1. **T. monogyna,** *L. Mant.* 69 (1767). **Hin-sarana,** *S.*
T. obcordata, Roxb., Thw. Enum. 23. C. P. 1102.
Fl. B. Ind. ii. 660. Wight, Ic. t. 288 (*T. obcordata*).

A prostrate, somewhat succulent herb, stems rather angular, glabrous or slightly pubescent, much branched; l. obliquely opp., very unequal, the upper one larger, $\frac{3}{4}$–1 in., the lower smaller, $\frac{1}{4}$–$\frac{1}{2}$ in., obovate, tapering to base, rounded, often apiculate at apex, petiole $\frac{1}{4}$ in., connate, very much dilated and membranous at base, especially of the smaller l. which forms a deep triangular axillary pouch containing the solitary sessile fl.; cal.-segm. ovate, acute; stam. 10–20; ov. truncate, style simple; capsule small, almost concealed in the stipular pouch, about 8-seeded, cap exserted, truncate, carrying away with it 3 seeds; seeds reniform, black, dull, muriculate.

Low country, especially on the coast and in the dry region near tanks. Colombo; Kantalai; Anuradhapura.
Throughout Tropical regions.

2. **T. triquetra,** *Rottl. and Willd. in Neue Schrift. Natur. Fr. Berlin*, iv. 181 (1803). **Chiruppadikkirai,** *T.*
Fl. B. Ind. ii. 660 (*T. crystallina*).

A diffuse herb with a woody rootstock, branches numerous, prostrate, divaricate, covered with minute papillæ; l. opp. or alt., $\frac{1}{2}$–$\frac{5}{8}$ in., linear or linear-lanceolate, obtuse, fleshy, petiole short, sheathing; fl. sessile, numerous, several in an axil, not enclosed in sheath of petiole; cal.-tube thick, with numerous slender ribs, segm. broad, triangular, acute, persistent, folded over top of ripe capsule; stam. 5; style simple; fruit enclosed in cal.-tube, 2-seeded, cap flat but much depressed in centre, carrying away with it one seed; seeds rather large, strongly striate, dark brown.

Var. *β*, **Rottleri,** *Trim.* *T. crystallina*, Thw. Enum. 23; Trim. Syst. Cat. 39 (non Vahl). C. P. 3552.

Less woody at base or quite herbaceous, branches more slender, often tufted and congested; l. smaller, $\frac{1}{4}$–$\frac{3}{8}$ in., less fleshy; fl. smaller, 1 or 2 in an axil; cal.-segm. more shortly triangular, less acute, not folded over top of ripe capsule.

Dry region; rather rare. The type only at Mantai, N. Prov. Var. *β* more common; Trincomalie; Gunners' Quoin; Batticaloa; Tissamaharama; Mannar. Fl. Nov.–Feb.
Also in the dry regions of Afghanistan, Arabia, and India.
I was inclined to consider these as distinct species, but Dr. Stapf, of Kew, informs me that in that Herbarium there are connecting forms. *T. crystallina*, Vahl, to which this is referred by Thwaites and in Fl. B. Ind., is a quite different species from Arabia and Nubia only.
Eaten in curries at Mannar.

3. **T. decandra,** *L. Mant.* 70 (1767). **Maha-sarana,** *S.* **Charanai,** *T.*
Thw. Enum. 23. C. P. 1104.
Fl. B. Ind. ii. 661. Wight, Ic. t. 296.

Stems long, prostrate, slightly branched, angular, glabrous, with long internodes; l. opp., pair rather unequal, $\frac{3}{4}$–$1\frac{1}{2}$ in., oblong-oval, rounded and apiculate at apex, slightly fleshy, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., much dilated and amplexicaul at base; fl. on short ped., in dense umbellate, shortly stalked, axillary clusters, bracts scarious, acute; cal.-tube short, segm. much longer, oval, acute, with membranous margins; stam. 10; styles 2; capsule not included in cal.-tube, 4-seeded, cap large, solid, very truncate, carrying away with it 2 seeds; seeds finely wrinkled, black.

Low country, chiefly in the dry region; rather rare. Batticaloa and Jaffna (Gardner); Trincomalie (Glenie); Colombo (Thwaites); Tissamaharama; Mantai. Fl. Dec.; bright pink.

Also in India, Burma, and Timor.

The flowers are very pretty when fully expanded.

3. MOLLUGO, *L.*

Small, often annual, herbs, l. apparently whorled or radical, without stip., fl. small, axillary or in terminal cymes; sep. 5, distinct; pet. 0 or 5; stam. 3, 5, or 10, hypogynous; ov. superior, 3- or 5-celled with numerous ovules, styles 3 or 5; capsule membranous, enclosed in persistent sep., 3- or 5-celled, loculicidally dehiscent; seeds reniform, embryo more or less curved.—Sp. 12; 6 in *Fl. B. Ind.*

Fl. axillary; seeds with a filiform appendage.
  Densely stellate-hairy . . . . . . 1. M. HIRTA.
  Glabrous . . . . 2. M. OPPOSITIFOLIA.
Fl. in terminal cymes; seeds not appendaged.
  L. in whorls at nodes.
    Seeds with raised tubercles . . . . 3. M. PENTAPHYLLA.
    Seeds smooth or nearly so.
      Stems numerous, glabrous . . . . 4. M. CERVIANA.
      Stem solitary, glandular-pubescent . . 5. M. DISTICHA.
  L. all radical . . . . 6. M. NUDICAULIS.

1. **M. hirta,** *Thunb. Fl. Cap.* 120 (1818).
Glinus dictamnoides, L., Thw. Enum. 24. C. P. 2937.
Fl. B. Ind. t. 662. Burm. f. Fl. Ind. t. 36, f. 1 (*G. lotoides*).

Annual, stems numerous, prostrate, spreading from a centre, 6–12 in., not much branched, densely stellate-hairy, l. opp. or several at a node, unequal, largest $\frac{1}{2}$–$\frac{3}{4}$ in., rotundate or broadly oval, tapering to base, very obtuse at apex, stellate-

downy on both sides, petiole $\frac{1}{4}$ in., slender, stellate-hairy; fl. axillary, 1-6 at a node, ped. unequal, $\frac{1}{8}$–$\frac{5}{8}$ in., stiff, divaricate; sep. $\frac{1}{4}$ in., lanceolate, acute, stellate-hairy outside; pet. filiform, about as long as sep., deeply bifid; stam. 10; ov. ovoid, glabrous, 5-lobed, 5-celled, with very numerous ovules, stigmas 5, sessile, spreading; seeds ovoid, pitted, dark brown, shining, with a small white scale at the hilum extended into a long filiform process which curves over the top of the seed.

Dry region; rather common. Bintenne; Anemaduwa, N.W. Prov. Fl. July, August; pinkish-white.

In all Tropical and warm countries.

2. **M. oppositifolia,** *L. Sp. Pl.* 89 (1753). **Hin-pala,** *S.* **Kachchantiray,** *T.*

Herm. Mus. 4. Burm. Thes. 13. Fl. Zeyl. n. 52. Moon Cat. 9. *Pharnaceum Mollugo*, L., Moon Cat. 23. *M. Spergula*, L., Thw. Enum. 24; Trim. Syst. Cat. 39. C. P. 1095.

Fl. B. Ind. ii. 662 (*M. Spergula*). Burm. Thes. t. 7.

Annual or perennial, stems numerous, prostrate, much branched, glabrous, with long internodes; l. in whorls of 4 or 5, unequal, 2 usually larger than the others, reaching $\frac{3}{4}$ in., from linear to oval, often somewhat spathulate, much tapering to base, rounded or acute, apiculate at apex, petiole obscure; fl. axillary, 1–5 at a node, ped. $\frac{1}{4}$–$\frac{3}{8}$ in., very slender; sep. oblong, subacute, with membranous margins; pet. generally 0; stam. 3; capsule surrounded by persistent sep., oblong-ovoid, 3-celled; seeds very numerous, tuberculate, brown, with a similar appendage to *M. hirta*.

Low country, especially in the dry region; a common weed. Fl. all the year; white.

Also in India, Trop. Africa, and Australia.

Varies considerably in habit and in width of leaves. Linnæus's name, *M. Spergula*, has been usually applied to this, but is later by six years than his *M. oppositifolia*.

Wight and Arnott state (Prod. 44) that all the Indian specimens have 5-forked pet. and 5 or 10 stam.

Used as a pot-herb. 'Jean-pala' is Hermann's name for this.

3. **M. pentaphylla,** *L. Sp. Pl.* 89 (1753).

Herm. Mus. 33. Burm. Thes. 12 and 13. Fl. Zeyl. n. 51. Moon Cat. 9. Thw. Enum. 24. *M. stricta*, L., Thw. Enum. 24; Trim. Syst. Cat. 39. C. P. 1096, 1097.

Fl. B. Ind. ii. 663 (*M. stricta*). Burm. Thes. t. 6, f. 2 and t. 8, upper figure.

Annual, with many spreading, diffuse, dichotomously branched, slender, glabrous, quadrangular stems; l. 2–6 in a whorl, $\frac{1}{2}$–1 in., from lanceolate-linear to obovate, much tapering to base, apiculate, petiole obscure; fl. numerous, on

filiform ped., arranged in lax, corymbose, terminal cymes; sep. rotundate-oval, obtuse; capsule globose, walls very thin, seeds numerous, closely covered with minute raised tubercles.

Low country, especially in the dry region; common. Fl. June, July; white.

Throughout India, Malaya, China, Japan, &c.

M. pentaphylla is the older by nine years of Linnæus's two names, and is therefore here adopted. *M. stricta* has narrower leaves, not at all obovate, and is kept up as separate by Thw.

Hermann erroneously gives the S. name 'Wisnagarandi' (='Visnukiranti' which belongs to *Evolvulus*) for this.

4. **M. Cerviana,** *Ser. in DC. Prod.* i. 392 (1824). **Patpadakam,** *T.*

Pharnaceum triflorum, Moon Cat. 23. Thw. Enum. 24. C. P. 1092.

Fl. B. Ind. ii. 663. Lam. Ill. t. 214, f. 1. Pluk. Phyt. t. 332, f. 1 (good).

Annual, with very numerous, erect, very slender stems 5–8 in. high, branches umbellate, nodes thickened; l. 2–6 or more in a whorl, $\frac{1}{4}$–$\frac{5}{8}$ in., linear, very narrow, apiculate; fl. numerous, on long, stiff filiform ped., usually in 3's at end of long filiform axillary and terminal peduncles; sep. oval-oblong, obtuse, with membranous margins; seeds quite smooth, red-brown.

Dry region; rather common. Jaffna and Kalpitiya (Gardner).

Also in dry districts of India and rest of Asia, Africa, and Australia.

Much used as a medicine in fever.

5. **M. disticha,** *Ser. in DC. Prod.* i. 392 (1824).

Burm. Thes. 161. *Pharnaceum distichum*, L., Moon Cat. 23. Thw. Enum. 24. C. P. 1094.

Fl. B. Ind. ii. 663. Burm. Thes. t. 71, fig. 2. Wight, Ic. t. 3 (?).

Stem solitary, erect, angular, finely glandular-pubescent, dichotomous with ascending branches; l. 3–6 in. a whorl, $\frac{3}{4}$–1 in., lanceolate-linear, tapering to base, subacute, glabrous, petiole obscure; fl. on short glandular-pubescent ped., arranged in corymbose cymes which afterwards lengthen out into stiff elongated racemes with distant fl.; sep. oval, obtuse, membranous; capsule broadly ovoid, seeds very nearly smooth, shining, red-brown.

Near the seacoast; rare. Colombo and Jaffna (Gardner). Fl. white.

Also in S. India.

Wight's figure represents a large hairy plant, unlike Ceylon examples, and Burmann's is not very characteristic. Thw. says this is 'not uncommon' on the coast, but there are no specimens collected by him among the C. P. plants.

6. **M. nudicaulis,** *Lam. Encycl.* iv. 234 (1796).

Thw. Enum. 24. Burm. Thes. 14. C. P. 2809.

Fl. B. Ind. ii. 664. Burm. Thes. t. 8, lower fig.

Annual, slender, l. all radical, crowded, about $1\frac{1}{2}$ in., oblong-spathulate, rounded at apex, much tapering into ill-defined petiole, glabrous, entire; fl.-stems several, erect, 4–6 in., slender, glabrous, leafless, trichotomously branched above, fl. on stiff, glabrous ped., arranged in lax trichotomous cymes; sep. oval, very obtuse, with membranous margins, capsule nearly globose; seeds minute, reticulate, dull black.

Low country; rare: probably overlooked. Colombo (Thwaites). Fl. Dec.; white.

Also in dry parts of India, Trop. Africa, New Caledonia, Cuba.

4. **GISEKIA,*** *L.*

Annual, l. opp., without stip., fl. small, in axillary clusters; sep. 5, slightly connate at base, persistent; pet. 0; stam. 5, hypogynous, fil. dilated below; carp. 5, distinct, ovule solitary in each carp., basal; ripe carp. enclosed in persistent sep., membranous, seed ovoid, slightly compressed, filling the carp., embryo curved into a ring.—Sp. 5 or 6; 1 in *Fl. B. Ind.*

G. pharnaceoides, *L. Mant.* 562 (1771). **Manali,** *T.*
Moon Cat. 23. Thw. Enum. 250. C. P. 1093.
Fl. B. Ind. ii. 664. Wight, Ic. t. 1167.

A rather succulent herb, branches prostrate or ascending, elongated, glabrous; l. opp., $\frac{1}{2}$–$\frac{3}{4}$ in., oblong-spathulate, tapering at base to short petiole, obtuse or rounded and apiculate at apex, glabrous, rather thick, glaucous; fl. very small, numerous on slender ped., in dense, nearly sessile axillary umbels; sep. oblong-oval, obtuse, with membranous borders; ripe carp. membranous, surrounded by sep., seed solitary, rounded on back, black, with scattered short white prominences (glands?).

Low country in damp sandy places; rather common. Jaffna; Trincomalie; seashore, Mt. Lavinia; Mannar. Fl. Feb.

Drier parts of India, Affghanistan, Africa.

There are specimens of this in Hermann's Herb. (i. fol. 19); and in his Mus. (p. 4) he says it is eaten in salads, as is still the case. Linnæus seems to have included it under Fl. Zeyl. n. 52 (*Mollugo oppositifolia*), Hermann having given the same S. name for it.

The leaves and other parts abound in large raphides.

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* Commemorates P. D. Giseke, M.D. of Hamburg, Editor of Linnæus's *Prælectiones* on the Natural Orders, published in 1792.

LXIII.—UMBELLIFERÆ.

ANNUAL or perennial herbs, l. alt., simple or compound, without stip. (except in *Hydrocotyle*) but with petiole sheathing; fl. usually bisexual, often slightly irregular, in simple or compound umbels; cal.-tube adnate to ov., segm. 5 or 0 (so that there seems to be no cal.); pet. 5, distinct, often bifid with an inflexed apex, imbricate (sometimes valvate in *Hydrocotyle*); stam. 5, epigynous; ov. inferior, crowned with large epigynous disk, 2-celled with one pendulous ovule in each cell, styles 2; fruit of 2 separable carp. (mericarps) attached by summit to slender central axis, indehiscent, with 5 ridges down back and sides and often with sunken oil cavities (vittæ) between them; seed pendulous, with a small embryo in cartilaginous endosperm.

Fl. in heads or simple umbels
  Leaves entire . . . . 1. HYDROCOTYLE.
  Leaves palmatisect . . . . 2. SANICULA.
Fl. in compound umbels
  Fruit rounded or slightly compressed laterally
    Fl. yellow, l. simple . . . . . . 3. BUPLEURUM.
    Fl. white
      Primary umbels with an involucre . . 4. CARUM.
      Primary umbels without an involucre . 5. PIMPINELLA.
  Fruit much dorsally compressed, flat
    Glabrous . . . . 6. PEUCEDANUM.
    Hairy . . . . 7. HERACLEUM.

Only 10 species represent here this vast Order of temperate climates. Of these, 6 are restricted to the hill country and 3 more extend into it, *Carum stictocarpum* being the only species confined to the low country.

1. HYDROCOTYLE, *L.*

Prostrate perennial herbs, rooting at the nodes, l. orbicular or reniform, with stip., fl. in very small heads or umbels opp. the l.; cal.-segm. minute or 0; pet. entire, valvate or imbricate; fruit rather fleshy, laterally compressed, commissure narrow, mericarps with the primary and sometimes the secondary ribs visible, vittæ 0.—Sp. about 70; 5 in *Fl. B. Ind.*

Stip. cauline; carp. with primary ribs only
  L. 3–4 in.; peduncles clustered . . . . 1. H. JAVANICA.
  L. under 1 in.; peduncles solitary . . . 2. H. ROTUNDIFOLIA.
Stip petiolar; carp. with both primary and secondary ribs . . . . 3. H. ASIATICA.

1. **H. javanica,** *Thunb. Diss.* ii. 415 (1800). **Maha-gotukola,** *S.*
H. capitata, Moon Cat. 22. *H. zeylanica*, DC. Prod. iv. 6, 7. *H. nepalensis*, Hk., Arn. Pug. 19. Thw. Enum. 130. C. P. 1634, 2812.
Fl. B. Ind. ii. 667. Wight, Ic. t. 1003 (*H. polycephala*).

Stems very long, succulent, slightly pubescent especially beneath the nodes, sending up erect, stout, flexuose branches; l. 3–4 in, orbicular in outline, rather broader than long, very deeply cordate, palmately lobed less than half way down, very coarsely crenate, thin, very shining on both sides, with a few weak bristly hairs on the veins, petiole of l. from prostrate stem, erect, 6–8 in., of those of upright branches much shorter, cylindrical, pubescent, stip. large, cauline, rotundate, membranous; fl. very small, sessile, 20 or more crowded in dense globular heads on short hairy peduncles 2–6 together from nodes of the upright branches; cal.-segm. 0; pet. lanceolate, acute, valvate; ov. much compressed, glabrous, style spreading; fruit under $\frac{1}{8}$ in., much compressed, smooth, mericarps with primary ridges.

Moist places in grass under trees; very common in the moist region up to 7000 ft. Fl. May–October; pale green.

Also in India, Malaya, Trop. Australia, and E. Trop. Asia.

The large stip. completely enclose the end of the growing branch and young leaf. At the higher elevations the petioles and peduncles are more woolly, and the flowers on longish pedicels, var. β, *Thw.* (C. P. 2812). *H. zeylanica*, DC., was collected by Leschenault about Kandy, and is merely a luxuriant form.

Used medicinally in the same way as *H. asiatica.* Mr. E. Green, of Pundaluoya, states (Taprobanian, iii. 7) that the Tamil coolies employ it as a fish-poison.

2. **H. rotundifolia,** *Roxb. Hort. Beng.* 21 (1813).
H. nitidula, Hk., Thw. Enum. 130. C. P. 1635.
Fl. B. Ind. ii. 668. Wight, Ic. t. 564.

Very small, stems filiform, copiously rooting, glabrous; l. $\frac{1}{2}$–$\frac{3}{4}$ in., nearly circular in outline, the basal lobes almost in contact, but not overlapping, palmately cut half way down into 5 or 7 broad obtuse lobes, crenate, glabrous and shining above, with few coarse hairs beneath, petiole erect, $\frac{1}{2}$–$1\frac{1}{2}$ in., glabrous, stip. membranous, obtuse; fl. minute, almost sessile, 4–8 in a head, peduncle very short, slender, solitary, bracts oblong, as long as fl.; pet. lanceolate, acute, valvate; styles spreading; fruit extremely small, rather broader than long, compressed, mericarps with primary ribs blunt, glabrous.

Upper montane zone, in moist places rather common. Nuwara Eliya; Hakgala; Horton Plains. Fl. all the year; pinkish.

Also in India, Malaya, W. Trop. Africa.

3. **H. asiatica,** *L. Sp. Pl.* 234 (1753). **Hin-gotukola,** *S.* **Vallarai,** *T.*

Herm. Par. Bat. 238. Burm. Thes. 122. Fl. Zeyl. n. 118. Moon Cat. 22. Thw. Enum. 130. C. P. 2810.

Fl. B. Ind. ii. 669. Herm. Par. Bat. t. 238. Wight, Ic. t. 565. Bentl. and Trim. Med. Pl. t. 117.

Stems long, prostrate, given off from l.-axils of a short vertical rootstock, cord-like, glabrous, with very long internodes; l. several from the rootstock and 1 to 2 from each node of the runners, petiole 3–6 in., erect, glabrous, furrowed above, stip. short, adnate to petiole and forming a sheathing base, blade horizontal, more or less cupped, $1\frac{1}{2}$–2 in., reniform, rather broader than long, the rounded basal lobes often overlapping, shallowly dentate-crenate, glabrous and shining on both sides; fl. nearly sessile, usually 3 together at end of short erect pubescent peduncles, 1–3 from the nodes, opp. the l., bracts 2, close beneath umbel, ovate, obtuse; cal.-segm. 0; pet. minute, ovate, acute, slightly imbricate (?); ov. very much compressed, slightly hairy, styles very short, erect; fruit about $\frac{1}{6}$ in., ovoid, hard, pericarps thickened, mericarps with the primary and secondary ribs very obscure or vein-like.

Waste grassy places from sea-level to the highest elevations; a very common weed. Fl. May to October; dark pink.

In all Tropical and Sub-tropical countries.

Much used as an alterative tonic, especially for children, and has also a reputation for skin complaints. The powdered dry leaves are an official drug in the Indian Pharmacopœia.

2. SANICULA, *L.*

A perennial, erect herb, l. deeply palmatisect; fl. minute, in small involucrate heads arranged in cymes; cal.-segm. lanceolate; pet. with a long incurved point; fruit ovoid, not compressed, thickly covered with hooked spiny prickles, ribs obscure.—Sp. 10; 1 in *Fl. B. Ind.*

S. europæa, *L. Sp. Pl.* 235 (1753).

Thw. Enum. 130. C. P. 2813.

Fl. B. Ind. ii. 670. Wight, Ic. t. 1004 (*S. elata*).

Rootstock stout, ascending; l. mostly radical, on erect petioles 4–6 in. long and glabrous and sheathing at the base, $1\frac{1}{2}$–2 in., very broadly ovate in outline, cordate at base, palmately cut nearly to the bottom into 3 acute, spinous-serrate lobes often again deeply 3-fid, glabrous on both sides, dark green above, paler beneath; flowering stem 9–18 in. high, slightly dichotomously branched above, with a short-petioled leaf at each node, striate, glabrous; fl. sessile, 3 or 4

in little heads on long peduncles arranged in trichotomous cymes, bracts of involucre about 9, short, linear, acute; pet. minute, bifid, with a long incurved acute point; ov. thickly covered with long, erect, soft, white, hooked prickles, styles long, spreading; fruit about ⅛ in., ovoid, not compressed, thickly set with stiff spreading hooked prickles, mericarps semicircular on section, the ribs very obscure.

Upper montane zone in woods, very rare. N. Eliya (Nock); Elk Plains; between Maturata and Nuwara Eliya. Fl. April–June; white.

Also in the Himalaya and Nilgiris, and in Temp. Asia and Africa and Europe. An English species.

3. BUPLEURUM, *L.*

Herbaceous, l. quite entire, fl. in compound umbels with both general and partial involucres, small, yellow; cal.-segm. 0; pet. broad, notched point much inflexed; disk broad, flat; fruit not compressed, mericarps somewhat pentagonal, ridges very distinct, with 1–3 vittæ between them.—Sp. 60; 13 in *Fl. B. Ind.*

B. virgatum, *W. and A. Prod.* 370 (1834). **Wal-enduru,** *S.*

B. nervosum, Moon Cat. 22. *B. falcatum*, L., var., Thw. Enum. 131. C. P. 225.

Fl. B. Ind. ii. 676 (*B. mucronatum*, var.). Wight, Ic. t. 1007 (*B. ramosissimum*).

Annual (or perennial?), stem erect, 1–3 ft., with many ascending branches, cylindrical, striate, glabrous; l. grass-like, sessile, 2½–4½ in., amplexicaul but not sheathing at base, linear, acuminate, mucronate at apex, glabrous, glaucous green, with a very narrow horny margin, veins slender, nearly parallel, distinct and unbranched; general umbels long-stalked, numerous, arranged in lax, elongated, terminal, somewhat corymbose panicles, rays 4–6, general involucre of 3–6 lanceolate-linear very acuminate bracts, partial umbels of 6–8 fl., ped. short, partial involucre of 4 or 5 bracts rather exceeding fl.; pet. distant, broad, point much inflexed; fruit rather over ⅛ in., ovoid, brown, shining, mericarps rounded on back with the primary ribs prominent, and with a broad, conspicuous dark vitta in each furrow, often with a smaller one on either side.

Rocky open places and patanas in the montane zone, 3000–7000 ft.; common on the Eastern (Uva) slopes, but scarcely found on the Western (Kandy) side. Fl. Feb.–August; lemon-yellow.

Also in the Nilgiri Mts.

The Ceylon plant is not at all variable except in size, but the Fl. B.

Ind. is no doubt right in combining Wight's three species, *B. virgatum*, *mucronatum*, and *ramosissimum*, into one. Moon's name is the oldest, but was published (as were all of his names) without description.

4. **CARUM,** *L.*

Herbaceous, l. compound; fl. in compound umbels with both general and partial involucres; cal.-segm. very small; pet. broad, obtuse; fruit ovoid, scarcely compressed, mericarps sub-pentagonal, ridges slender, with a single vitta in the furrows.—Sp. about 50; 10 in *Fl. B. Ind.*

C. stictocarpum, *Clarke in Fl. B. Ind.* ii. 688 (1879).

Annual, 2–5 in. high, much branched, stem glabrous; lower l. pinnate or bipinnate, lflts. deeply cut into linear-lanceolate apiculate segm., glabrous petiole with broad ciliate sheaths; primary umbels with 3–5 rays, involucre of 3 setaceous bracts, partial umbel of 6–10 fl., involucre of 3–6 lanceolate-linear bracts with broad white margins; ov. finely pubescent; pet. broad, obtuse; fruit very small, glabrous, brown, mericarps not compressed, the ridges slender, filiform, rather faint.

Dry country, very rare. In sheltered crevices of the rocky boulders of coral-stone forming the headland at Kirimalai near Kankesanturai, Jaffna, abundant. There are also specimens in Herb. Perad. from W. Ferguson, without locality, labelled '*Pimpinella involucrata* (?)' Fl. Feb., white.

Also from Concan, Western India, and Mt. Abu, N.W. Provinces, India.

The numerous specimens in Hb. Kew are all much more luxuriant than ours, which are, doubtless, much dwarfed by the very hot and dry locality. It is possibly an accidental introduction.

[*C. nothum*, Clarke, is recorded with doubt for Ceylon in Fl. B. Ind. ii. 681. There are specimens in Hb. Kew so localised by Dr. T. Thomson, but an error is probable. Another specimen is from Mysore.]

C. Roxburghianum, Benth. (*Ptychotis*, DC.), cultivated in native gardens, is an occasional weed. It is figured in Wight, lc. t. 567.

5. **PIMPINELLA,** *L.*

Annual or perennial, l. simple or compound, fl. in compound umbels, with partial but no general involucre; pet. with long inflexed points; fruit ovoid or subglobose, slightly compressed, mericarp subterete, but flat or concave at commissure, ridges prominent or obscure, vittæ 2 or 3 in each furrow.—Sp. about 70; 22 in *Fl. B. Ind.*

Leaves trifoliolate . . . . 1. P. HEYNEANA.
Leaves simple . . . . 2. P. LESCHENAULTII.

1. **P. Heyneana,** *Wall. Cat. n.* 566 (1828). **Wal-asamodagan,** *S.*
Sium triternatum, Moon Cat. 22. *Helosciadium Heyneanum.*, DC., Thw. Enum. 130. Arn. Pug. 19. C. P. 182.
Fl. B. Ind. ii. 684.

Annual, stem $1\frac{1}{2}$–3 ft., with ascending branches, glabrous; l. trifoliolate, smaller upwards, rachis $1\frac{1}{2}$–3 in., dilated with ciliate margin at base, lflts. stalked, lanceolate or linear-lanceolate, tapering to base and apex, acute, coarsely serrate, glabrous, the lat. ones often deeply 3-lobed; primary umbels 6–12-rayed, rays slender, unequal; partial umbels 4–8-flowered, with long spreading unequal ped., bractlets 1 or 2, linear, or 0; styles short; fruit very small, $\frac{1}{16}$ in., almost globose, slightly didymous, primary ridges slender, prominent.

Waste ground and roadsides, rather rare. Four Korales (Moon); Uva, very abundant up to 4000 ft. (Thwaites); Morowak Korale; Anuradhapura.

Also in India and Burma.

In Morowak Korale this was growing in great abundance with Kurakkan, and looked as if purposely sown.

2. **P. Leschenaultii,** *DC. Prod.* iv. 122 (1830).
Thw. Enum. 131. C. P. 515.
Fl. B. Ind. ii. 687. Wight, Ic. t. 1005.

Perennial with a branched rootstock; l. nearly all radical, petioles erect, from 2 to 12 in., sparingly hairy, much dilated and sheathing at base, blade $1\frac{1}{2}$–4 in., rotundate-ovate, very deeply cordate at base, with a narrow sinus or with the rounded lobes slightly overlapping, coarsely crenate-dentate, glabrous above, more or less hairy beneath and on edges, rather thick, veins conspicuous beneath, stem-l. few, much smaller and on shorter petioles, the uppermost ones cut into lanceolate segm.; primary umbels with 12–20 equal pubescent rays, partial ones of 15–20 fl., ped. pubescent, bractlets few, setaceous, hairy; pet. with a long inflexed point, the outer ones of the umbels somewhat radiant; styles rather long, erect, ov. pubescent; fruit about $\frac{1}{8}$ in., ovoid, rather tapering upwards, crowned with cal.-segm. and conical disk, mericarps very slightly compressed, concave on commissure, ribs obscure, vittæ small, 2 in each furrow, and 2 on commissure.

In wet places in the patanas, upper montane zone, very rare. Only on Horton Plains and on the descent thence to Galagama. Fl. Feb.; white.
Also in the Nilgiris.

6. PEUCEDANUM, *L.*

Herbaceous, l. triternate, umbels compound, with no general and a small partial involucre; pet. obovate, bifid;

fruit oblong-oval, very much compressed, mericarps flat, the 3 dorsal ridges slender and narrow, the 2 lat. ones expanded into narrow wings, vittæ solitary in the furrows.—Sp. about 100; 9 in *Fl. B. Ind.*

P. zeylanicum, *Gardn. in Calc. Journ. Nat. Hist.* viii. 14 (1847). *Palimbia ramosissima*, Thw. Enum. 131 (non DC.). C. P. 135. Fl. B. Ind. ii. 710.

Annual (?), stem erect, 3–5 ft., branched, striate, glabrous, hollow; radical l. about 1 ft. long, triternate, rachis slender, glabrous, sheathing at base, lflts. very deeply 3-sect, the lobes linear, acuminate, very acute, glabrous, glaucous; uppermost l. reduced to sheaths with a few small filiform segm.; primary umbels with 10–12 rays, no involucre, partial of 10–12 fl. on very long ped., bractlets few, setaceous; fruit $\frac{1}{4}$–$\frac{3}{8}$ in., very much compressed, tipped with conical disk, mericarps very thin, the dorsal ridges slightly raised.

Upper montane zone, very rare. Found by Gardner, in 1846, in open grassy rocky places on the descent from Horton Plains to Galagama, but not since collected. Fl. Feb., March; white.

Gardner says that the plant when bruised gives an odour like that of Fennel, and that it was called 'Wal-enduru' by the Siṇhalese.

7. HERACLEUM, *L.*

Perennial herb, l. mostly radical, pinnate, umbels compound, many-rayed, with both general and partial involucres; cal.-segm. acute; pet. with long inflexed point; fruit oval, very much compressed, mericarps flat, with 3 dorsal ribs flat and broad and 2 lateral ones expanded into broad wings, vittæ conspicuous, one in each furrow and several on commissure, carpophore bipartite.—Sp. 50; 21 in *Fl. B. Ind.*

H. zeylanicum, *Gardn. in Fl. B. Ind.* ii. 716 (1879). *Sium lobatum*, Moon Cat. 22. *H. nepalense*, Don, Arn. Pug. 19. *H. Sprengelianum*, Thw. Enum. 131 (non W. and A.). C. P. 145. Fl. B. Ind. ii. 716.

Rootstock stout, ascending, nodose, tough; l. mostly radical, spreading, pinnate, rachis 4–10 in., stout, cylindrical, hairy, with broad ciliate stip. adnate to lower part and forming a sheathing base, lflts. 3–7 (1–3 pair and an end one), 2–3 in., the lowest pair generally stalked, broadly ovate in outline, but very deeply pinnately cut (often almost to the base) into broadly oblong, acute, coarsely spinous-serrate lobes, hairy on both sides, especially on the raised reticulate venation beneath;

flowering stem 1–2½ ft., erect, slightly branched, striate, finely hairy, stem-l. few, gradually smaller upwards, and at top reduced to the broad sheathing petioles without lflts., umbels few, on long stalks, general with about 12–20 rays and an involucre of 2 or 3 inconspicuous obtuse bracts, partial with about 20 fl. on rather long ped. and an involucre of few unequal lanceolate bractlets; pet. broad, with long, attenuate incurved apex; styles short, curved; fruit ⅜–½ in., very much compressed, oval or oblong-oval, rounded at both ends, often slightly obovate, mericarps much dorsally flattened, glabrous and shining, wings semi-transparent, vittæ black.

Upper montane zone, rather common. Fl. Feb.–July; greenish-white, anth. purple.

Endemic.

In Fl. B. Ind. ii. 715, some specimens of C. P. 145 collected by Gardner on Adam's Peak are referred to *H. rigens*, Wall. figured in Wight, Ic. t. 1059. I do not, however, think we have more than a single species, and, though probably it is conspecific with the Nilgiri forms, it does not quite agree with any of Wight's figures or descriptions. That figured in Wight, Ill. ii. t. 116 (as *Pastinaca ligusticifolia*), seems nearest. The form of the lower leaves is very variable, and on Horton Plains occurs a luxuriant form with very much cut leaves, which are nearly glabrous.

LXIV.—ARALIACEÆ.

TREES or climbing shrubs, l. compound, alt., with stip. adnate to petiole; fl. regular, bisexual; cal.-tube adnate to ov., segm. very small or 0; pet. 5–9, distinct, valvate; stam. 5–9, epigynous; ov. quite (rarely only ½-) inferior, crowned with epigynous disk, 4–9-celled, with one pendulous ovule in each cell, styles as many as cells, distinct or connate or 0; fruit small, berry-like, indehiscent, pyrenes several, compressed, embryo minute in copious endosperm.

L. pinnate . . . . 1. POLYSCIAS.
L. digitate . . . . 2. HEPTAPLEURUM.

Heptapleurum stellatum and *emarginatum* inhabit the moist low country, *Polyscias* and the other species of *Heptapleurum* the montane zone, into which also *H. emarginatum* extends.

1. **POLYSCIAS,** *Forst.*

Tree, l. imparipinnate, with adnate stip., fl. jointed on the ped., in panicles; cal.-limb with 5 tooth-like segm. pet. 5,

thick, valvate; stam. 5, small, epigynous; disk flat; ov. quite inferior, 4- or 5-celled, with one pendulous ovule in each cell, styles 4 or 5, distinct; fruit broadly ovoid, ribbed, pyrenes compressed, endosperm not ruminate.—Sp. 8; 2 in *Fl. B. Ind.*

P. acuminata, *Seem. in Journ. Bot.* iii. 181 (1865).
Hedera acuminata, Wight, Thw. Enum. 131. C. P. 4.
Fl. B. Ind. ii. 727. Wight, Ic. t. 1062. Bedd. Fl. Sylv. t. 213.

A small tree, quite glabrous; l. large, pinnate, rachis 8–9 in., stout, cylindrical, somewhat thickened at base and amplexicaul, lflts. 5 or 7 (2 or 3 pairs and end one) shortly stalked, $3\frac{1}{2}$–$4\frac{1}{2}$ in., lanceolate, acute at base, attenuate, very acute at apex, entire, with narrowly recurved margin, glabrous, rather thick; fl. on short stout ped. articulated at each end, 3–5 in little umbels terminating short branches, which come off from upper parts of thick erect axes, 2–5 of which are umbellately arranged at end of stout peduncle opp. the l., bracts linear, setaceous; cal. glabrous, segm. acute; pet. very thick, concave, apex inflexed, acute; disk broad, fleshy; styles short, erect, blunt; fruit (not seen ripe) crowned with cal.-limb and enlarged spreading styles, obscurely ribbed, glabrous.

Montane zone; very rare. Banks of streams, Gangalla, near Adam's Peak, between 4000 and 5000 ft. (Thwaites); Bogawantalawa. Fl. Feb.–May; pale green.

Also in the mountains of S. India.

[*Pentapanax Leschenaultii*, Seem., is given for Ceylon in Fl. B. Ind ii. 724, but I do not know on what authority. There are no specimens.]

Panax fruticosum, L., is a very common cultivated hedge-plant. It is probably a native of Malaya, but is nowhere now found wild.

2. **HEPTAPLEURUM,** *Gaertn.*

Trees or climbing shrubs, l. digitate, with stip. adnate to petiole or intrapetiolar, fl. in umbels or racemes arranged in panicles; cal.-limb small or absent; pet. 5–9, valvate, stam. same number as pet., epigynous, disk flat or prominent, ov. quite or half inferior, cells as many as pet. and stam., with a single pendulous ovule in each cell, styles usually 0 or very short or combined into a cone; fruit small, ovoid, often bluntly ribbed, endosperm not ruminate.—Sp. 50; 15 in *Fl. B. Ind.*

Lflts. 4–9.
  Styles combined into a cone . . . . . 1. H. RACEMOSUM.
  Styles 0.
    Climbing shrub; disk flat . . . . . 2. H. STELLATUM.
    Tree; disk conical . . . . . . 3. H. EXALTATUM.
Lflts. solitary or 3. . . . . 4. H. EMARGINATUM.

1. **H. racemosum,** *Bedd. Fl. Sylv.* t. 214 (1873?).
Hedera racemosa, Wight, Thw. Enum. 132. C. P. 549.
Fl. B. Ind. ii. 729. Wight, Ic. t. 1015. Bedd. Fl. Sylv. t. 214 (from a Ceylon specimen).

A large tree, much branched, branchlets stout, marked with scars of fallen l., young parts covered with dense, pale orange, readily detached scurf; l. palmate, petiole 4–5 in., cylindrical, thickened and stem-clasping at base, lflts. 5–9, spreading, on stalks about 1 in. long, oblong-ovate, 3–4 in., rounded at base, acuminate, usually twisted at apex, often conduplicate, quite glabrous when mature, dark green above, paler beneath, rather coriaceous, venation reticulate, pellucid; fl. numerous, on short, stout, furfuraceous ped., arranged in umbellate stalked racemes spreading divaricately from stout rachis of large, erect, or drooping terminal or extra-axillary panicle which is over 12 in. long, buds small, ovoid, blunt; cal. furfuraceous, limb very slightly developed, truncate; pet. usually 5, ovate, subacute; disk nearly flat; ov. quite inferior, styles combined into a short blunt cone; fruit about $\frac{1}{4}$ in., ovoid, tipped with a beak, with 5–9 blunt, vertical ribs.

Forests of montane zone, 3000–6000 ft.; rather common. Fl. April, May; pale green.
Also in the mountains of S. India.
The leaflets of young plants are often deeply gashed, with unequal narrow very acute segment.

2. **H. stellatum,** *Gaertn. Fruct.* ii. 472 (1791). **Itta, Itta-wel,** *S.*
Herm. Mus. 50. *Hedera terebinthacea*, Vahl, Symb. iii. 42; Moon Cat. 18. *Paratropia terebinthacea*, Arn. Pug. 20. *Hedera Vahlii*, Thw. Enum. 132. C. P. 1632.
Fl. B. Ind. ii. 730. Wight, Ic. t. 1011 (*Hedera obovata*).

A large, scandent, epiphytic shrub, branchlets stout, glabrous, marked with leaf-scars; l. palmate, petiole $2\frac{1}{2}$–4 in., cylindrical, glabrous, thickened and with an amplexicaul sheath at base, lflts. 4–7, on petioles $\frac{1}{2}$–1 in., oval, $2\frac{1}{2}$–$3\frac{1}{2}$ in., acute at both ends, rather thick, glabrous; fl. over $\frac{1}{2}$ in., on rather long slender glabrous ped. articulated at base, 3–8 in stalked umbels arranged on branches of large terminal panicles, bracts membranous, acuminate, soon falling, buds very blunt; cal. truncate without a limb; pet. 6–9 (usually 8) acute, with an inflexed point; stam. shorter than pet.; disk large but not prominent; ov. 6–9-celled; styles 0; fruit over $\frac{1}{4}$ in., clavate-ovoid, faintly ribbed, yellow.

Moist low country to 3000 ft. or higher; common. Fl. June; yellow.
Also in S. India.
The leaves used as a cattle medicine.

3. **H. exaltatum,** *Seem. in Journ. Bot.* iii. 80 (1865).
Hedera exaltata, Thw. Enum. 132. C. P. 1633.
Fl. B. Ind. ii. 730 (*H. Wallichianum*).

A large tree, glabrous; l. palmate, petiole 8–9 in., stout, cylindrical, glabrous, lflts. 5–9, on stalks $1\frac{1}{2}$–2 in. long, large, 5–8 in., oblong-lanceolate, rounded at base, acuminate, entire, glabrous, thickly coriaceous; fl. nearly $\frac{1}{2}$ in., ped. $\frac{1}{2}$ in., 12–20 in long-stalked umbels, arranged on a stout rachis over 1 ft. long, no bracts, buds large, nearly globular; cal. glabrous, limb truncate; pet. 7–9, linear-oblong, acute, thick; stam. 7–9, spreading, fil. flat, narrow; disk very large, conical, blunt, ribbed; ov. $\frac{1}{2}$-inferior, styles 0; fruit $\frac{1}{4}$ in., globose, the upper half above the rim of the cal.-limb, with 7–9 blunt vertical ribs, glabrous.

Montane zone, 4000–6000 ft.; rather rare. Hunasgiriya; Passelawe; Ramboda. Fl. June.

Also in the mountains of S. India.

4. **H. emarginatum,** *Seem. in Journ. Bot.* iii. 80 (1865). [PLATE XLVI.]
Hedera emarginata, Moon Cat. 18; Thw. Enum. 132. C. P. 655.
Fl. B. Ind. ii. 729.

An epiphytic climbing shrub, but often dwarf and bushy, glabrous, branches stout, virgate, with numerous short lateral branchlets, bark silvery-grey; l. numerous, closely placed, 1-(rarely 3-) foliolate, petiole $\frac{3}{4}$–1 in., slender, thickened and amplexicaul at base, lflts. nearly sessile, articulated on petiole $1\frac{1}{4}$–$1\frac{1}{2}$ in., cuneate or oblong-cuneate, tapering to base, truncate rounded and deeply emarginate or 2-lobed at apex, very thick (veins prominent when dried); fl. rather small, on rather long stiff ped., 2–4 together in small umbels at end of divaricate, slender branches of very lax panicles coming off opp. the l. of the lat. branchlets, no bracts; cal.-limb 0, pet. 5, ovate, acute, very soon falling; stam. longer than pet.; disk rather prominent; ov. quite inferior, 5- (rarely 4-) celled, styles 5 (or 4), very short, distinct; fruit small, $\frac{1}{6}$ in., broadly ovoid, truncate, smooth, pulpy, dark purple.

Moist country up to 4000 ft.; rather rare. Sabaragamuwa (Moon); Hunasgiriya (Thw.); Kukul Korale; near Peradeniya; Kuruwita Korale. Fl. May, June; greenish-pink.

Endemic.

This curious species often appears as an ordinary bush, but it is able to climb the largest trees.

LXV.—CORNACEÆ.

TREES or shrubs, l. alt., without stip.; cal.-tube adnate to ov., segm. 4 or 5; pet. 4–10, valvate; stam. def. or indef., epigynous; ov. quite inferior, crowned with epigynous disk, 1-celled with a single pendulous ovule, style simple; fruit a drupe, epicarp fleshy, stone woody; seed oblong, embryo in fleshy endosperm.

Stam. 15 or more; pet. very long . . . . . . 1. ALANGIUM.
Stam. 4 or 5; pet. short . . . . 2. MASTIXIA.

Alangium Lamarckii is a dry-country plant, *Mastixia arborea* is montane, the other two species are found in the moist region, extending into the hills.

1. **ALANGIUM**,* *Lam.*

Trees or shrubs, l. alt., no stip., fl. in axillary clusters; cal.-tube adnate to ov., limb saucer-shaped, segm. 5, small; pet. usually 6 (4–10) long, valvate; stam. 15–indef., epigynous, fil. short, with a tuft of hair near base, anth. very long, linear; ov. inferior, 1-celled, with a single pendulous ovule, style very long, surrounded at base by epigynous disk, stigma large, 4-lobed; drupe externally fleshy, crowned with cal.-limb; seed solitary, embryo straight in axis of slightly ruminate endosperm, cotyledons foliaceous.—Sp. 2 or 3; 1 in *Fl. B. Ind.*

Small erect tree; fruit 1 in. . . . . . . 1. A. LAMARCKII.
Subscandent shrub; fruit ⅝ in.. . . . . . 2. A. GLANDULOSUM.

1. **A. Lamarckii,** *Thw. Enum.* 133 (1859). **Mul-anninchil,** *T.*
A. decapetalum and *A. hexapetalum*, Lam., Moon Cat. 42. Thw. Enum. 133. C. P. 760.
Fl. B. Ind. ii. 741. Wight, Ic. t. 194 (*A. decapetalum*), Ill. t. 96 (*A. hexapetalum*).

An erect tree of small size, occasionally with short, sharp, spinous branchlets, bark whitish, young parts pubescent; l. variable, 2½–6 in., oblong-oval or oblong-lanceolate, acute or rounded at base, more or less acuminate, obtuse at apex, entire, glabrous above, pubescent on veins beneath and often with small tufts of hair in their axils, venation rather prominent beneath, the lat. veins very oblique, petiole short, pubescent; fl. large, on densely pubescent ped. ⅜ in. long and jointed near the top, 1–3 in the axils; cal. silky-pubescent,

* *Alangi* is given by Rheede as the Malabar name.

segm. very shallow, acute; pet. usually 6, about $\frac{5}{8}$–$\frac{3}{4}$ in., narrowly linear, densely pubescent outside, reflexed; stam. numerous (over 20), nearly as long as pet., erect; style as long as stam., stigma very large; fruit nearly globular when fully ripe (previously oblong-oval), near 1 in. diam., capped with persistent cal.-limb, finely pubescent, not ribbed, purplish-red.

Dry and intermediate regions; rather common. Jaffna; Bintenne; Polonarua; Uma-oya; Lagalla District; Hanguranketa; Dikwelle Uva; Kurunegala. Also about Colombo, but not wild there. Fl. June–July; white.

Also throughout India and Malaya, S. China, Philippines, and E. Africa.

Moon gives native names, 'Ipetta' and 'Katapetta,' for this, and 'Kiri-anguna' has been given me, but I doubt if it has a real Sinhalese name. Specimens from Polonarua have narrowly oblong-linear leaves.

The bark is bitter. Heart-wood hard, close-grained, dark yellow.

2. **A. glandulosum,** *Thw. Enum.* 133 (1859).
C. P. 381.
Fl. B. Ind. ii. 742 (*A. Lamarckii*, var.).

A subscandent shrub, climbing by its horizontal branchlets, bark brown, young parts furfuraceous, dark red; l. $2\frac{1}{2}$–5 in., oblong-oval or oblong-lanceolate, acute at base, conspicuously caudate-acuminate, glabrous above, very minutely glandular-puberulent beneath, lat. veins with small glandular pits in their axils; fl. smaller than in the last, ped. glandular-pubescent, articulated close to the top with 3 or 4 small bractlets beneath the joint, 1–4 in the axils; cal. glandular-pubescent, segm. small, very acute; pet. usually 6, barely $\frac{1}{2}$ in., linear; stam. 15–20; fruit $\frac{5}{8}$ in. diam., nearly globose, smooth, purplish-red.

Moist region, 2000–4000 ft.; rather rare. Dolosbagie; Alagala; Hantane; Ambagamuwa; Adam's Peak. Fl. March; white, calyx red.

Endemic.

This is regarded as a variety of *A. Lamarckii* in Fl. B. Ind.; it does not appear ever to have thorns.

2. MASTIXIA, *Bl.*

Large trees, l. alt., without stip., fl. in terminal panicles; cal.-tube adnate to ov., segm. 4 or 5, small; pet. 4 or 5, valvate; stam. 4 or 5, epigynous, anth. short; disk large, fleshy; ov. quite inferior, 1–celled, with a single pendulous ovule, style simple; drupe with a hard fleshy epicarp, and a bony endocarp, which is deeply intruded down one side; seed ovoid,

embryo narrow, in copious fleshy endosperm, radicle very long. —Sp. 8; 6 in *Fl. B. Ind.*

Placed in *Olacaceæ* by some authors.

Stam. and pet. 4 . . . . 1. M. TETRANDRA.
Stam. and pet. 5 . . . . 2. M. ARBOREA.

1. **M. tetranda,** *Clarke in Fl. B. Ind.* ii. 745 (1879). **Maha-tawara,** *S.* [PLATE XLVII.]

Bursinopetalum tetrandrum, Wight, Thw. Enum. 42. C. P. 2441. Fl. B. Ind. ii. 745.

A large tree, bark smooth, pale, twigs numerous, stout, puberulous; l. 3–4 in., oval or lanceolate-oval, acute at base, caudate-acuminate, obtuse at apex, entire, glabrous, rather stiff, dark green, pale beneath, petiole ½ in., channelled above; fl. small, about ¼ in., on very short pubescent ped., in lax, terminal, corymbose panicles; cal.-segm. broad, shallow; pet. 4, ovate, acute; stam, 4, fil. very short; style very short; fruit ¾ or ⅞ in., ovoid-oblong, crowned with small cal.-teeth and style, cylindrical, smooth.

Var. β, **Thwaitesii,** *Clarke, l. c.* **Diya-taleya,** *S.* C. P. 2542.

Young parts glabrous, l. crowded, smaller, 1¾–2 in., erect, rounded or very obtuse at apex, rather coriaceous; panicles small, few-flowered, glabrous.

Moist region up to 4000 ft.; rather rare. Deltota; Ambagamuwa. Var. β, montane zone, 4000–7000 ft.; rather common. Fl. March–May; pale green.

Endemic.

Var. β ought perhaps to be regarded as a distinct species. Wood red, rather heavy, liable to split. The leaves have a resinous odour and dry black, and the bark yields a scented resin. The inflorescence is sometimes monstrous, the flowers being converted into short twigs, set with minute imbricated bracts.

2. **M. arborea,** *Clarke in Fl. B. Ind.* ii. 746 (1879).

Bursinopetalum arboreum, Wight, Thw. Enum. 42. C. P. 637, 2440. Fl. B. Ind. ii. 746. Wight, Ic. t. 956.

A large tree, twigs very stout, glabrous, marked with leaf-scars; l. 4–8 in., oval or obovate-oval, tapering to base, rounded or very shortly acuminate at apex, margins often revolute, glabrous, coriaceous, petiole ½–1½ in., broad, flattened above; fl. ⅜ in. wide, on very short ped., in threes at ends of branches of stout, terminal corymbose panicles, bracts small, lanceolate, acuminate; cal. glabrous, segm. triangular, acute; pet. 5, ovate-oblong, acute, with an inflexed thickened apex; stam. 5; disk large, prominent; style short, conical; fruit about 1¼ in., oblong-ovoid, cylindrical, truncate, smooth, purplish-green.

Montane zone, 4000–7000 ft., rather rare. Hantane; Dimbula; Ambagamuwa; Nuwara Eliya. Fl. March, April; green, disk yellow.

Also in Cachar and the Nilgiris.

The leaves dry black. C. P. 2440 has leaves with larger petioles and a broader fruit.

LXVI.—CAPRIFOLIACEÆ.

SHRUBS or small trees, l. opp., without stip., fl. regular, bisexual, in paniculate cymes; cal.-tube adnate to ov., limb small, segm. 5; cor. tubular-campanulate, lobes 5, equal; stam. 5, inserted on cor.-tube; ov. inferior, 1–3-celled, with a single ovule in each cell, style very short, stigma large, slightly 3-lobed; fruit a drupe, with a thin hard endocarp, 1-seeded; seed compressed, embryo very small in fleshy endosperm.

Chiefly distinguished from *Rubiaceæ* by the absence of stipules. Both our species occur only in the higher mountain region.

VIBURNUM, *L.*

For characters, see Order.—Sp. 80; 17 in *Fl. B. Ind.*

L. entire; fruit black . . . . 1. V. CORIACEUM.
L. serrate; fruit red . . . . 2. V. ERUBESCENS.

1. **V. coriaceum,** *Bl. Bijd.*, 656 (1825).
V. zeylanicum, Gardn. ex Hk. f. and Th. in Journ. Linn. Soc. ii. 179. *V. hebanthum*, Thw. Enum. 136 (non W. and A.). C. P. 39.
Fl. B. Ind. iii. 5.

A large shrub, young parts glandular-pilose; l. 4–5 in.; oval-lanceolate, subacute at base, shortly acuminate, acute at apex, entire, somewhat undulate, glabrous above and very nearly so beneath; rather thick, lat. veins about 6 on each side, oblique, prominent beneath, petiole $\frac{3}{4}$–1 in., channelled above; fl. sessile, in threes at ends of branches of terminal, stalked, umbellate-corymbose cymes, finely glandular-pubescent; cal.-limb very short, segm. very small; cor. nearly glabrous, lobes very small, acute, spreading; stam. slightly exserted; fruit $\frac{1}{4}$ in., oblong-ovoid, compressed, tipped with small cal.-limb, glabrous, black, endocarp 2-grooved on dorsal, 1-grooved on ventral surface.

Var. β, **capitellata,** *Clarke.* *V. capitellata*, Wight, Ic. t. 1022.

Fruit rather smaller and more compressed.

Upper montane zone; common (?). Horton Plains; Maturata; Adam's Peak. Var. β, Adam's Peak (Fl. B. Ind.). Fl. April, white.
Also in the mountains of India and Malaya.

2. **V. erubescens,** *Wall. Pl. Asiat. Rar.* ii. 29 (1830).
Thw. Enum. 136. C. P. 1636.
Fl. B. Ind. iii. 7. Wight, Ic. t. 1024 (*V. Wightianum*). Wall. l. c. t. 134.

A small slender tree with few virgate branches, bark smooth, yellowish, buds stellate-pubescent; l. 2–4 in., oval, acute or rounded at base, acuminate, acute at apex, sharply dentate-serrate in upper half, glabrous above, stellate-hairy on veins beneath; thin, lat. veins 4 or 5 on each side, very oblique, conspicuous, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., sparsely stellate-hairy; fl. on short ped., in small, slightly drooping, racemose cymes, terminating short lateral branchlets; cal. glabrous, segm. lanceolate, cor.-lobes rounded, spreading or recurved; stam. not exserted; fruit $\frac{1}{3}$ in., oblong-ovoid, much compressed; glabrous, red.

Upper montane zone; rare. Sita Eliya, near Hakgala; Elephant Plains (Gardner); Horton Plains (Thwaites). Fl. May; pale pinkish-white or cream-coloured.
Also in the Himalaya and Nilgiri Mountains.
A very pretty shrub when in blossom. The leaves have a strong pungent odour when bruised. The wood is said to be very hard and close-grained.

We have no species of *Lonicera* in our mountains, though 2 occur in the Nilgiris.

LXVII.—RUBIACEÆ.

HERBS, shrubs or trees, rarely climbing, l. opposite or whorled, simple, entire (sometimes crenate in *Neurocalyx*), with inter-petiolar stip. often connate and forming a sheath (absent in *Galieæ*); fl. regular, bisexual or rarely unisexual, often dimorphic; cal.-tube adnate to ov., free limb usually more or less developed, rarely 0; cor. varying from long-tubular to rotate, lobes 4–9, usually 5 (2-lipped in *Dichilanthe*), valvate or imbricate or twisted in æstivation; stam. as many as cor.-lobes, inserted in throat or tube of cor.; anth. distinct (very rarely connate); ov. inferior, 1–10- usually 2-celled, crowned with epigynous disk, ovules solitary or many (rarely 2) in each cell, erect or horizontal or pendulous, style usually simple,

stigma entire or lobed; fruit a capsule, a berry or a drupe, 2–10-celled, or of 2–4 dehiscent or indehiscent cocci; seeds 2–numerous, embryo various, in fleshy or horny endosperm.

A very large Tropical Family of which 138 species are here included; particularly characteristic of the wet region. In the dry country only 31 species occur, and of these 11 only are restricted to it; *Adina* and *Scyphiphora* (the latter a seashore plant) being the only genera so circumscribed. In our moist region, on the other hand, are found 107 species, and 77 of these do not extend beyond it. These latter are pretty equally dispersed over the low country and the hills, and 42 are confined to the former and 35 to the latter. To the moist low country are restricted the genera *Uncaria*, *Fergusonia*, *Schizostigma*, *Byrsophyllum*, *Nargedia*, *Scyphostachys*, *Guettarda*, *Dichilanthe*, and *Geophila*, and to the montane zone the genera *Allœophania* and *Acranthera.*

Nearly half of our species, as many as 68, are endemic, and four genera are peculiar to Ceylon: *Leucocodon*, *Schizostigma*, *Nargedia*, and *Scyphostachys.*

Ovules more than 2, usually numerous, in each cell.
  Fl. crowded in dense globose heads (*Naucleæ*).
    Cal.-tubes fused into a fleshy mass . . . 1. SARCOCEPHALUS.
    Cal.-tubes distinct.
      Trees.
        Cal.-segm. linear . . . . . . 2. ANTHOCEPHALUS.
        Cal.-segm. clavate . . . . . . 3. ADINA.
        Cal.-segm. 0 . . . . 4. STEPHEGYNE.
        Cal.-segm. oblong, appendaged . . 5. NAUCLEA.
      Climber with hooked peduncles . . . 6. UNCARIA.
  Fl. not in dense globose heads.
    Fruit a capsule.
      Cor.-lobes twisted in bud . . . . . 7. WENDLANDIA.
      Cor.-lobes valvate in bud.
        Cor.-lobes with a tooth on each side . 8. DENTELLA.
        Cor.-lobes entire.
          Cal.-segm. 5.
            Cal.-segm. large, membranous; capsule dry, not compressed . . 9. NEUROCALYX.
            Cal.-segm. small; capsule coriaceous, much compressed . . . . 15. OPHIORRHIZA.
          Cal.-segm. 4, small
            Cal.-segm. contiguous . . . 12. HEDYOTIS.
            Cal.-segm. distant.
              Seeds numerous . . . . 13. OLDENLANDIA.
              Seeds few . . . . . 14. ANOTIS.
    Fruit a fleshy berry.
      Cor.-lobes valvate (*Mussændeæ*).
        Inflorescence terminal, cymose.
          One cal.-segm. often developed into a large leaf, rest deciduous . . . 16. MUSSÆNDA.
          Cal.-segm. equal, persistent . . . 17. ACRANTHERA.
        Infl. terminal, capitate, surrounded by large involucre . . . . . . 18. LEUCOCODON.
        Infl. axillary; ov. 5-celled.
          Shrubs . . . . 19. UROPHYLLUM.
          Creeping herb . . . . . . 20. SCHIZOSTIGMA.

Cor.-lobes twisted (*Gardeniæ*).
  Infl. terminal or leaf opposed.
    Fl. diœcious . . . . 22. BYRSOPHYLLUM.
    Fl. bisexual.
      Ov. 2-celled.
        Seeds few . . . . . . 21. WEBERA.
        Seeds numerous . . . . 23. RANDIA.
      Ov. 1-celled . . . . . . 24. GARDENIA.
  Infl. axillary (also sometimes in 23).
    Endosperm ruminate . . . . 25. NARGEDIA.
    Endosperm not ruminate.
      Fl. in bracteate spikes . . . 26. SCYPHOSTACHYS.
      Fl. in clusters . . . . . . 27. DIPLOSPORA.
Ovules 2 in each cell (see also 12 and 27) . . 28. SCYPHIPHORA.
Ovules solitary in each cell (see also 14).
  L. with stipules.
    Fruit indehiscent, usually fleshy.
      Cor.-lobes valvate (or rarely imbricate).
        Ov. 2-celled (spuriously 4-celled in 37).
          Corolla 2-lipped . . . . . 31. DICHILANTHE.
          Corolla regular.
            Ovules pendulous . . . . 33. CANTHIUM.
            Ovules on the dissepiment
              Fl. in a confluent head . . . 37. MORINDA.
              Fl. not confluent . . . . 38. PRISMATOMERIS.
            Ovules basilar, erect.
              Trees or shrubs; infl. cymose.
                Cor.-tube short, straight . . 39. PSYCHOTRIA.
                Cor.-tube rather long, curved . 40. CHASALIA.
                Cor. funnel-shaped . . . 43. SAPROSMA.
              Herb; infl. umbellate . . . 41. GEOPHILA.
        Ov. 4- or more-celled.
          Cor.-lobes imbricate . . . . 29. GUETTARDA.
          Cor.-lobes valvate.
            Ov. 12-celled . . . . . . 30. TIMONIUS.
            Ov. 4-celled; stip. connate . . 10. ALLŒOPHANIA.
            Ov. 4- (or 5-) celled; stip. not connate 42. LASIANTHUS.
      Cor.-lobes twisted (*Ixoreæ*).
        Fl. in copious cymes.
          Style longer than cor.; stigma 2-lobed 34. IXORA.
          Style twice as long as cor.; stigma entire 35. PAVETTA.
        Fl. solitary or in threes . . . . 36. COFFEA.
    Fruit dry, dehiscent septicidally.
      Carp. 2, very small, separating from central axis, indehiscent . . . . . . 32. KNOXIA.
      Carp. 2, very small, one or both ventrally dehiscent . . . . 45. SPERMACOCE.
      Carp. 2, large, much compressed, tardily separating . . . . 44. HYDROPHYLAX.
      Carp. 4, indehiscent . . . . . . 11. FERGUSONIA.
  L. without stip., whorled (*Galieæ*).
    Corolla campanulate . . . . . 46. RUBIA.
    Corolla rotate . . . . 47. GALIUM.

1. SARCOCEPHALUS, *Afzelius.*

Tree, stip. large, fl. small, sessile, in dense globose terminal heads, without bractlets, the cal.-tubes fused into a fleshy mass; cal.-segm. 4 or 5, clavate, persistent; cor.-tube long, lobes 4 or 5, imbricate; stam. 4 or 5, inserted in mouth of cor.; ov. long, 2-celled, with numerous imbricated ovules; fruits sunk in a fleshy mass, 2-celled, seeds few, small, oblong.—Sp. 8; 3 in *Fl. B. Ind.*

S. cordatus, *Miq. Fl. Ind. Bat.* ii. 133 (1856). **Bakmi,** *S.* **Vammi,** *T.*

Fl. Zeyl. n. 53. *Nauclea orientalis*, L. Sp. Pl. ed. 2, 243. *N. macrophylla*, Roxb. (?), Moon Cat. 14. *N. cordata*, Roxb. Fl. Ind. i. 509. *N. coadunata*, Roxb., Thw. Enum. 137. C. P. 1658, 781.

Fl. B. Ind. iii. 22. Bedd. Fl. Sylv. t. 318.

A small tree, bark silvery-grey, smooth, branches marked with prominent leaf-scars, young parts minutely stellate-pubescent; l. large, 4–8 in., broadly ovate-oval, slightly caudate at base, rounded or very obtuse at apex, entire, undulate, glabrous above, glabrous or finely pubescent beneath, petiole $\frac{3}{4}$–1 in., stip. $\frac{1}{2}$–1 in., obovate-rotundate, slightly connate, deciduous; fl. very numerous, fused together by their fleshy cal.-tubes, heads $\frac{3}{4}$–1 in. diam., on stout peduncles; cal.-segm. small, club-shaped, cor.-tube long, lobes acute; stam. included; style very long, much exserted, stigma large, clavate; head of fruit about 1 in., globose, solid, fleshy; seeds slightly rough, black.

Low country in both moist and dry regions; rather common. Fl. May, June; pale yellow, styles white.

Also in Malaya, Philippine Is., and perhaps N. Australia, but not in Peninsular India.

Hermann's drawing (there is no specimen) is certainly this; which fixes Linnæus's *Nauclea orientalis* as originally the same, but he also quotes Hort. Malab. iii. t. 33, which rather represents *Anthocephalus Cadamba.* Roxburgh's *N. cordata* was raised from Ceylon seed sent to Calcutta in 1802.

The leaves and flower-heads of the dry country form (C. P. 781) are smaller than those from the moist region, and the l. more pubescent beneath. The head of fruit is succulent, and is eaten, hence the tree is often called 'Kana-bakmi.' Wood yellow, light, rather soft.

2. ANTHOCEPHALUS, *A. Rich.*

Tree, stip. large, fl. sessile, in dense globose terminal heads, the cal.-tubes closely pressed together but not fused, without bractlets; cal.-segm. 5, linear, persistent; cor.-tube funnel-

shaped, long, lobes 5, imbricate; stam. 5, inserted at mouth of cor.; ov. 2-celled below, 4-celled above, with numerous ovules in each cell, style long, stigma large, ovoid, fruit capsular, narrowly turbinate, truncate, pericarp thin below but hard and 4-lobed above; seeds numerous, very small, angular, not winged.—Sp. 3 or 4; 1 in *Fl. B. Ind.*

A. Cadamba, *Miq. Fl. Ind. Bat.* ii. 135 (1856). **Embul-bakmi,** *S.* **Vellaikadampa,** *T.*
Nauclea orientalis, Moon Cat. 14 (non L). *Nauclea Cadamba*, Roxb., Thw. Enum. 137. C. P. 1659.
Fl. B. Ind. iii. 23. Bedd. Fl. Sylv. t. 35.

A large tree with erect trunk and horizontal branches, young parts pubescent; l. large, 6–11 in., oblong-lanceolate, acute or rounded at base, acuminate, acute at apex, glabrous and shining above, pubescent on the veins beneath, petiole 1–1¼ in., stip. about ½ in., narrowly lanceolate, acute; heads 1¼–1½ in., on short stout peduncles; cal.-segm. obtuse, pilose at ends; cor.-lobes erect, lanceolate, acute; capsule about ¼ in., compressed, angular, closely packed but scarcely confluent, crowned by long persistent cal.-segm.; pericarp transparent in lower part; seeds muriculate.

Low country up to 2000 ft., Thwaites says 'common,' but I have only seen specimens from Kurunegala, Alagalla and Pusselawa. Fl. September; orange-yellow, styles white, fragrant.
Also in India, Burma, Sumatra, Borneo.
The little capsular fruits are not confluent as generally described, though in very close contact with one another.
Thw. gives 'Hélamba' as S. name for this; it more properly belongs to *Stephegyne tubulosa*, but may be used for both.

3. ADINA, *Salisb.*

Large deciduous tree, stip. large, fl. small, sessile, crowded, not fused, in globose, axillary heads, with bractlets; cal.-segm. 5, clavate; cor.-tube long, lobes 5, short, valvate; stam. 5, inserted at mouth of cor.; style very slender, stigma globose; capsule small, 2-celled, truncate, readily dehiscent into 2 valves; seeds numerous, tailed at both ends.—Sp. 6; 4 in *Fl. B. Ind.*

A. cordifolia, *Hk. f. in Gen. Pl.* ii. 30 (1873). **Kolon,** *S.* **Manchalkadampa,** *T.*
Nauclea cordifolia, Moon Cat. 14; Thw. Enum. 137. C. P. 1660.
Fl. B. Ind. iii. 24. Bedd. Fl. Sylv. t. 33 (*Nauclea*).

A very large tree with erect trunk and horizontal branches,

bark brownish-grey, thick, soft, furrowed, young parts pubescent; l. closely placed, $3\frac{1}{2}$–$4\frac{1}{2}$ in., very broadly ovate, cordate at base, acuminate, acute at apex, glabrous above, more or less softly pubescent beneath especially when young, minutely reticulate, petiole long, 2–4 in., pubescent, stip. oblong-oval, obtuse, pubescent; heads about $\frac{3}{4}$ in., peduncles long, slender, usually in threes from axils of young l., jointed a little below the heads, fl. very numerous, bractlets clavate; cal. hairy inside and out, segm. club-shaped; cor.-tube slender, dilated above, pilose, lobes subacute, recurved; style much exserted; capsule very small, $\frac{1}{8}$ in., turbinate, very hairy.

Dry region; rather common, extending into intermediate region, *e.g.*, Kurunegala. Fl. July; yellow

Also in India and Burma.

This is quite deciduous for a short time. A form with thinner leaves, more cordate and with fewer longer hairs beneath, occurs at Anuradhapura. Wood rather hard and heavy, smooth, pale yellow, durable.

4. STEPHEGYNE, *Korth.*

Trees, stip. large, fl. sessile, crowded but not fused in terminal globose heads; cal.-limb tubular, truncate, segm. 0; cor. tubular, lobes 5, valvate, acute, recurved; stam. inserted at mouth of cor.; ov. 2-celled, with numerous ovules in each cell, style long, stigma large, oblong-ovoid; capsule 2-celled, septicidally dehiscent; seeds numerous, small, winged.—Sp. 10; 3 in *Fl. B. Ind.*

L. under 3 in.; cal.-limb short . . . . . . 1. S. PARVIFOLIA.
L. over 4 in.; cal.-limb long and tubular . . . 2. S. TUBULOSA.

1. **S. parvifolia,** *Korth. in Verh. Gesch. Nat. Bot.* 161 (1843?).
Chélampai, Nirkadampa, *T.*

Nauclea parvifolia, Roxb., Thw. Enum. 137. C. P. 780.
Fl. B. Ind. iii. 25. Bedd. Fl. Sylv. t. 34. Wight, Ill. t. 123.

A moderate-sized tree, bark rather smooth, whitish-grey thick, flaking off, young parts glabrous; l. $2\frac{1}{2}$–3 in., rotundate or broadly obovate-oval, acute or rounded at base, very obtuse or rounded at apex, entire, glabrous on both sides save for small tufts of hair in vein-axils beneath, thin, bright apple-green, pale beneath and minutely pellucid-reticulate, petiole under $\frac{1}{2}$ in., stip. $\frac{1}{2}$ in., oblong-spathulate, very obtuse pink; heads $\frac{3}{4}$ in., shortly pedunculate, cal.-limb very short; cor.-tube three times as long as acute recurved lobes, head of fruit $\frac{5}{8}$ in., capsules crowded but quite separate, oblong with blunt rounded tops marked with line of the cal.-limb, with 10 blunt vertical ribs.

Dry region; rather rare. Trincomalie; Mineri; Anuradhapura; Puttalam. Fl. April, July, August; greenish-yellow, scented, styles white.
Also in India and Burma.
Wood hard, heavy, smooth, pinkish-yellow, durable.

2. **S. tubulosa,** *Hk. f. in Gen. Plant.* ii. 31 (1873). **Hélamba,** *S.*
Nauclea tubulosa, Arn. in Thw. Enum. 137. *N. parvifolia*, Moon Cat. 14 (non Roxb.). C. P. 1657.
Fl. B. Ind. iii. 25. Bedd. Ic. Fl. Ind. or t. 18.

A small tree, bark smooth, pale brown, young parts slightly pubescent; l. 4–6 in., broadly ovate, rounded or subcordate at base, acuminate, acute at apex, glabrous on both sides or pubescent on veins beneath, thin, lat. veins numerous, very prominent beneath, intermediate venation minutely reticulate, pellucid, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., stip. very large, 1 in., broadly oval, very obtuse, veined, strongly keeled; heads usually terminal and sessile, sometimes axillary and pedunculate, $1\frac{1}{2}$ in., fl. not densely crowded, bractlets numerous, spathulate; cal.-limb long tubular; cor.-tube about twice as long as cal.-limb, hairy within, lobes half as long as tube, linear-oblong, acute; style much exserted, stigma oblong, truncate; capsule $\frac{3}{8}$ in., ovoid-oblong, crowned by persistent cal.-limb, slightly puberulous, 10-ribbed; seeds long.

Var. β, **minor,** *Thw. l. c.* C. P. 1656.

L. smaller, 2–3 in.; fl.-heads smaller, $\frac{3}{4}$ in.

Low country in the moist region; rare. Colombo; Kalutara (Moon); Hiniduma; Kukul Korale, abundant (Thwaites). Var. β in the dry country. Jaffna (Gardner); Anuradhapura (Brodie); Haragama. Fl. May and (var. β) Feb.; pink.
Also at Cochin, S. India.
Wood as in the last.

5. NAUCLEA,* '*L.*'

Tree, stip. large, fl. sessile, crowded in globose terminal heads, not fused; cal.-segm. 5, oblong, tipped with a small process; cor. tubular-funnel-shaped, lobes 5, imbricate, recurved, acute; stam. inserted at mouth of cor.; ov. 2-celled with numerous ovules in each cell on pendulous placentas, style long, exserted, stigma globular; capsule 2-celled, dehiscent; seeds numerous, winged.—Sp. 30; 5 in *Fl. B. Ind.*

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* Linnæus's genus *Nauclea* consisted of one species only, *N. orientalis*, which, as above shown, is *Sarcocephalus cordatus*. It does not appear upon what principle it can be now employed for a different one.

N. zeylanica, *Hk. f. in Fl. B. Ind.* iii. 26 (1880).

N. triflora, Moon Cat. 14. *N. peduncularis*, Thw. Enum. 137 (non Wall). C. P. 2820.

Fl. B. Ind. iii. 26. Bedd. Ic. Pl. Ind. or t. 235.

A moderate-sized tree, branchlets slender, young parts glabrous; l. 3–5 in., lanceolate, tapering to both ends, somewhat acuminate, obtuse or subacute at apex, glabrous on both sides, petiole short, under $\frac{1}{2}$ in., stip. oblong, rounded at apex; heads $\frac{1}{2}$–$\frac{3}{4}$ in., peduncles 1–1$\frac{1}{2}$ in. long, usually in threes at end of branchlets, slender; cal.-segm. obtuse, pubescent, with a small appendage at apex; cor. silky-pubescent, lobes oval, apiculate; style twice the length of cor.; capsule (not seen) short, many-seeded.

Moist low country; rare. Adam's Peak (Moon); Sabaragamuwa; Balangoda, abundant (Thwaites); Uma-oya. Fl. May, June; dull orange. Endemic.

This is very close to *N. peduncularis*, Wall. of Sumatra, to which Thw. refers it. If distinct, Moon's name is the oldest, and, though without description, should perhaps be adopted in preference to Hk. f.'s.

6. **UNCARIA,** *Schreb.*

A shrub, climbing by hooked peduncles, stip. large, fl. small, in dense pedunculate axillary heads; cal.-limb very short, segm. 5, triangular, obtuse; cor.-tube very slender, lobes 5, valvate; stam. 5, inserted at mouth of cor.; ov. 2-celled, with numerous ovules on large placentas, style long, exserted, stigma large, oblong; fruit an elongated capsule, septicidally dehiscent, valves 2, chartaceous; seeds minute, numerous, compressed, with very long membranous tails at each end.—Sp. about 30; 19 in *Fl. B. Ind.*

U. dasyoneura, *Korth. Verh. Nat. Ges. Bot.* 169 (1839). Var. **Thwaitesii,** *Hk. f. in Fl. B. Ind.* l. c.

U. Gambier, Thw. Enum. 138 (non Roxb.). C. P. 1661.

Fl. B. Ind. iii. 31. Bentl. and Trim. Med. Pl. t. 139, f. 7 and 8 (fruit and seed only. *U. Gambier*).

A very large wide-climbing shrub; stems stout, bluntly quadrangular, compressed below each node when young, glabrous, dark green, internodes long, young parts glabrous; l. very numerous, persistent, spreading or deflexed, 3$\frac{1}{2}$–4$\frac{1}{2}$ in., narrowly ovate or oblong-oval or oblong-lanceolate, rounded at base, suddenly caudate-acuminate, often twisted at apex, glabrous and shining above and beneath except for little tufts of hair in axils of lat. veins, coriaceous, dark green above, paler beneath, lat. veins 5–7 on each side, slender, conspicuous,

unbranched, prominent beneath, and connected by transverse venation, petiole $\frac{3}{8}$–$\frac{1}{2}$ in., stip. about $\frac{1}{4}$ in., oblong-oval, obtuse, entire; fl. numerous, nearly sessile, head $\frac{3}{4}$–1 in., globose, receptacle hairy, peduncle of two parts separated by a pair of bractlets, upper part slender, cylindrical, pubescent, lower part hard and woody, laterally compressed, tapering, curved, glabrous, becoming after the fall of the fruit much enlarged, falcately hooked and very rigid; cal. woolly, segm. very short; cor.-tube $\frac{3}{8}$ in., hairy outside, lobes obtuse, glabrous within; capsule $\frac{3}{4}$ in., stalked, narrowly ovoid, much tapering at both ends, crowned with persistent cal.-limb, slightly hairy, valves chartaceous, flat, separating from cal., which remains entire at top; seeds with very long membranous tails, 2 at one end and 1 at the other.

Moist low country up to 3000 ft.; rather rare. Kandy; Hantane; Deltota; Ambagamuwa; Morowak Korale; Kaduganawa; Colombo. Fl. March; yellowish-green.

The type in the Malay Peninsula, but our var. endemic.

This differs from *U. Gambier*, Roxb., of Malaya, which affords the Gambir or 'Terra japonica' of commerce, in its shorter cal.-segm. and the want of tufts of hair inside the cor.-lobes: I have also ascertained that the extract to be obtained by boiling the leaves of our plant does not resemble the commercial product from that species (which is figured in 'Medicinal Plants,' t. 139 exclusive of f. 7 and 8); but they are very closely allied.

The leaves when dried are a dark coppery-brown.

7. **WENDLANDIA,** *Bartl.*

A small tree, l. often in whorls of 3, stip. small; fl. small in large terminal panicles; cal.-segm 5, small; cor. tubular below, then recurved, shortly 5-lobed, lobes twisted in bud; stam. 5, inserted between cor.-lobes, anth. almost sessile; ov. globose, 2-celled, with numerous ovules on large placentas, style long, stigma large, bilobed, slightly exserted; fruit capsular, very small, globose, 2-celled, 2-valved; seeds numerous, very minute, flat.—Sp. 16; 14 in *Fl. B. Ind.*

W. Notoniana, *Wall. in W. and A. Prod.* 403 (1834). **Rawan-idala,** *S.*

W. bicuspidata, W. and A. Prod. 403. Thw. Enum. 159. C. P. 315. Fl. B. Ind. iii. 40. Wight, Ic. t. 1033. Bedd. Fl. Sylv. t. 224.

A small tree or large shrub with erect or ascending branches, bark orange-red coming off in fibrous strips, branchlets densely pubescent, buds very silky; l. usually 3 at a node, 4–5 in., lanceolate-oval, much tapering to base, acuminate, acute at apex, slightly pilose above, pubescent

beneath, undulate, rather thick, bright light green, paler beneath, with the prominent veins pink, petiole very short, pubescent, stip. barely $\frac{1}{4}$ in., linear-lanceolate, acute, conduplicate, sometimes bifid; fl. sessile or nearly so, very numerous, rather close on the branches of dense pubescent, pyramidal terminal panicles 6–12 in. long, bracts small, setaceous; cal. glabrous or nearly, segm. acute; cor.-tube about $\frac{1}{6}$ in., hairy within; capsule capped with cal.-segm., splitting from above loculicidally about half way down.

Var. β, **zeylanica,** *Hk. f. in Fl. B. Ind., l. c.*

L. nearly glabrous; fl. pedicellate, distant, panicles lax, drooping; cor.-tube longer.

Open places in the moist region from sea-level up to all elevations; very common. Var. β, rare. Fl. Feb., March; white.

Also in Peninsular India.

The young leaves are a delicate purplish-pink. The calyx is usually glabrous or nearly so in Ceylon. Neither of the figures quoted are characteristic of this very common plant, which, curiously, does not seem to have been seen by Hermann.

Wood rather heavy, hard, strong, brownish-red.

8. DENTELLA, *Forst.*

A small prostrate annual, fl. solitary, axillary; cal.-limb tubular, segm. 5; cor. funnel-shaped, lobes 5, short, toothed on each side, valvate; stam. 5, inserted low down in tube, included; ov. globose, 2-celled, with numerous ovules on large placentas, style very short, stigmas 2, long, filiform; fruit small, globular, dry, indehiscent, 2-celled; seeds numerous, minute, angular.—Monotypic.

D. repens, *Forst. Char. Gen.* 26 (1776).
Thw. Enum. 144. C. P. 1683.
Fl. B. Ind. iii. 42. Rumph. Herb. Amb. v. t. 170, f. 4 (poor).

A slender prostrate herb, stems long, slender, much branched, rooting at the nodes; l. very small, $\frac{3}{8}$ in. at most, lanceolate or subspathulate, tapering to base, acute, glabrous or with a few bristly hairs on margin, petiole obscure, stip. truncate, membranous; fl. solitary often in the forks of the stem, nearly sessile, cal.-limb persistent, segm. very acuminate; cor.-lobes ovate, acute, with a tooth on each side; fil. very short; fruit about $\frac{1}{8}$ in., crowned by large persistent cal.-limb, densely villous with coarse hair.

Low country, a weed in moist places; rather rare. Colombo; Haragama; Peradeniya. Fl. Aug., Sept.; white.

Throughout the Tropics of Asia, Polynesia, and N. Australia.

9. **NEUROCALYX,** *Hook.*

Small perennial herbs, l. crowded, stip. large, usually divided; fl. rather large, on drooping ped. in axillary racemes; cal.-segm. 5, large, coloured, membranous, reticulately veined, persistent; cor. small, rotate without a tube, lobes 5, valvate; stam. 5, fil. very short, anth. connate into a conical tube; ov. 2-celled with very numerous ovules in each, style simple, stigma terminal; fruit crowned with large persistent cal.-segm., dry, bursting irregularly; seeds very numerous, globose, muriculate.—Sp. about 8; 5 in *Fl. B. Ind.*

L. glabrous above.
Stip. divided into setaceous segm. . . . 1. N. ZEYLANICUS.
Stip. ovate, often bifid . . . . . . 2. N. WIGHTII.
L. hairy on both sides.
Cor.-lobes $\frac{1}{2}$ as long as cal. . . . . . 3. N. GARDNERI.
Cor.-lobes as long as cal. . . . . . 4. N. CHAMPIONII.

1. **N. zeylanicus,** *Hook. Ic. Plant.* t. 174 (1837).
Arn. in Ann. Nat. Hist. iii. 21. Thw. Enum. 138. C. P. 286.
Fl. B. Ind. iii. 47. Ic. Plant. t. 174.

Stem 3–4 in., slender, erect, ringed with stipular scars; l. closely placed, 4–7 in., linear-lanceolate, much tapering below, acuminate, acute, slightly undulate, crenate, glabrous above, paler and pubescent on the prominent veins beneath, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., pubescent, purple, stip. green, divided almost to base into setaceous, rather rigid, spreading segm.; fl. on rather long pubescent ped., racemes, erect, few-flowered, lax, shorter than l., bracts linear-setaceous, rather shorter than ped., cal.-segm. $\frac{1}{3}$ in., lanceolate, acuminate; cor.-lobes about half as long as cal.-segm., acute.

Moist region up to 4000 ft.; rare. Diyabetene, Sabaragamuwa; Opatte, S. Prov.; Adam's Peak (Walker). Fl. March; white.
Endemic.

2. **N. Wightii,** *Arn. in Ann. Nat. Hist.* iii. 22 (1839).
Thw. Enum. 138. C. P. 595.
Fl. B. Ind. iii. 47. Wight, Ic. t. 52 (*N. Hookeriana*).

Stems 3–8 in., semi-woody below, stout, marked with leaf-scars, the internodes often developed; l. large, 6–12 in., lanceolate, very much tapering to base, acuminate, acute, entire, glabrous above, paler and pubescent on the veins beneath, petiole obscure, stip. very large, foliaceous, ovate, acuminate; often with a filiform point, sometimes separated into their constituent pairs; fl. on pubescent ped., crowded, racemes dense, very much shorter than l., bracts large ovate, acumin-

ate; cal.-segm. about $\frac{1}{4}$ in. (enlarged in fruit), ovate, acuminate; cor.-lobes rather more than half as long, very acute; fruit pubescent.

Damp shady places in forests in moist low country up to 2000 ft.; rather common. Kukul Korale; Hiniduma; Ambagamuwa; Deltota; Dolosbagie. Fl. March, April; very pale pinkish-violet.

Also in S. India.

The above description covers *N. capitata*, Benth. in Fl. B. Ind. iii. 47 (where it is considered a distinct species). This appears to be the commonest form, but cannot be separated. *N. Hookeriana*, Wight, is a small form merely.

3. **N. Gardneri,** *Thw. Enum.* 139 (1859).
Thw. Enum. 139. C. P. 1671.
Fl. B. Ind. iii. 47.

Stem 2–4 in., stout, densely hairy; l. 6–9 in., oval or obovate-oval, tapering to base, subacute or very shortly acuminate, entire, thin, hairy on both sides, petiole very short, stip. split, the halves ovate, acuminate, densely pubescent; fl. on short ped., racemes villous-hairy, bracts lanceolate, acuminate, 2-toothed near base; cal.-segm. broadly ovate, acuminate, hairy outside, cor.-lobes about $\frac{1}{2}$ length of cal.-segm., oblong-lanceolate; fruit villous-hairy.

Damp forests in moist low country; very rare. Pasdun Korale (Gardner); Hewesse (Thwaites). Fl. Aug.

Endemic.

I have not met with this living. Much the most hairy of our species.

4. **N. Championii,** *Benth. in Thw. Enum.* 139 (1859).
Thw. Enum. 139. C. P. 3417, 3480.
Fl. B. Ind. iii. 47.

Stem very short, 1–3 in., slender, closely ringed with stipular scars; l. very closely placed, 3–6 in., obovate-oblong, tapering to base, rounded or obtuse at apex, often somewhat crenate, hairy on both sides (becoming glabrous above), usually very bullate above, thin, petiole $\frac{3}{4}$–$1\frac{1}{2}$ in., stip. deeply cut into 2 lanceolate acuminate segm.; fl. on slender hairy ped., racemes lax, few-flowered, bracts lanceolate, as long as ped., with 2 very small lateral lobes; cal.-segm., about $\frac{1}{4}$ in., ovate, acute; cor.-lobes equal to cal.-segm., linear-oblong, fruit hairy.

Damp forests in moist low region; rather rare. Kukul Korale; Singhe Raja Forest; Nillowe Kande; Bambarabotuwa; Hewesse. Fl. March, April, and September; calyx bright pink or white, corolla white.

Endemic.

Very like an *Acrotrema* in habit and foliage. Best distinguished by its bullate leaves.

10. **ALLŒOPHANIA,** *Thw.*

A weedy under-shrub, stip. large, connate, membranous, fl. small, dimorphic, crowded in dense axillary whorls; cal.-limb tubular, membranous, segm. 4, linear-setaceous, persistent; cor. funnel-shaped, lobes 4, valvate; stam. 4; ov. 4-celled, *with* 1 *erect ovule in each cell*, style simple, stigmas 4, long; fruit small, turbinate, enclosing 4 small bony 1-seeded pyrenes.—Sp. 2 or 3; 2 in *Fl. B. Ind.*, but none in Indian Peninsula.

This genus is difficult to place in the Order; it has affinities with *Lasianthus* as well as with *Hedyotis*.

A. decipiens, *Thw. Enum.* 147 (1859). [PLATE XLVIII.]
C. P. 3093.
Fl. B. Ind. iii. 48.

A coarse rigid perennial, stems numerous, 2–4 ft. high, semi-woody below, much divaricately branched, sub-quadrangular, adpressed-pubescent; l. 2–2½ in., lanceolate or oval-lanceolate, acute at base, acuminate, acute, glabrous or nearly so and bullate above, pilose silky or pubescent on the very prominent veins beneath, especially when young, petiole ¼–½ in., stip. connate, forming a tube, truncate, membranous, with branched bristly hairs, at length splitting up and deciduous; fl. sessile, very crowded in dense opp. axillary clusters forming whorls, cal.-limb long, segm. shorter than tube, linear, acuminate, bristly-hairy; cor. hairy at the mouth, lobes more than half as long as tube, lanceolate, acute, recurved, stam. erect; style hidden or exserted, stigma 4-fid; fruit small, flat-topped, crowned with cal.-limb and often connivent segm., pyrenes very small, triangular, smooth, yellow.

Var. β, **flavescens,** *Thw. Enum. l. c.* C. P. 3094.

L. oval or subrotundate, rounded or subcordate at base, the margin strongly revolute, veins much more hairy, often villous beneath.

Var. γ, **Arnottii,** *Hk. f. in Fl. B. Ind.* l. c. (sp.). *Hedyotis nodulosa*, var. α, Thw. Enum. 143. C. P. 87.

L. larger, acuminate at both ends, nearly glabrous, on longer petioles.

Montane zone from 3000 ft. upwards, especially at the higher elevations; very common. Fl. Feb.–Aug.; white or bluish, anth. violet.
Endemic.

This bears so strong a resemblance to *Hedyotis nodulosa* (with which, indeed, it was mixed even by Thwaites) that it can be distinguished with certainty only by examining the ovary or the fruit-structure. It is very

variable in respect to size, hairiness, width of leaves, and length of petiole, but I cannot see a second species among the forms, as in Fl. B. Ind.

The flowers are very liable to attack by some insect, which causes the corolla to become an enlarged hard inflated gall.

11. **FERGUSONIA**,* *Hk. f.*

A prostrate herb, stip. rigid, ciliate; fl. small, solitary sessile, axillary; cal.-segm. 4, acuminate; cor.-tube tubular-funnel-shaped, with a ring of hair within, lobes 4, valvate; stam. 4, inserted between cor.-lobes, fil. very short; epigynous disk of 4 prominent lobes; ov. 4-celled *with* 1 *erect ovule in each cell*, style simple, slightly exserted, stigmas 2, filiform; fruit of 4 separable membranous indehiscent cocci.—Monotypic.

A very anomalous plant of doubtful position in the Order.

F. zeylanica, *Hk. f. in Ic. Plant.* xii. 23 (1876).

Borreria tetracocca, Thw. Enum. 442. *F. Thwaitesii*, Hk. f. in Gen. Plant. ii. 132. C. P. 3859.

Fl. B. Ind. iii. 48. Hook. Ic. Pl. t. 1124. Bedd. Ic. Pl. Ind. or t. 39 (*Borreria tetracocca*).

Annual herb, stems procumbent or ascending, rooting at the lower nodes, 1–$2\frac{1}{2}$ ft. long, slightly branched, finely ciliate on the angles, pinkish; l. $\frac{3}{4}$–$1\frac{1}{4}$ in., narrowly oblong-lanceolate, subsessile, tapering to base, acute, glabrous above, sparingly bristly-hairy beneath, finely spinous-ciliate on edge, stip. $\frac{3}{8}$ in., lanceolate-linear, setaceous, rigid, strongly ciliate, persistent; fl. very small, sessile, solitary; cal.-segm. lanceolate, acute, ciliate with coarse bristly hairs; cor.-lobes oval, acute, with a few hairs on the back; fruit-cocci very small, pyriform, bristly on top, readily separating, and each bearing on top a single persistent cal.-segm.

Moist low country in dry places; apparently rather rare. Near Colombo (Ferguson); Labugama; Karawita. Fl. Sept.–Jan.; very pale pink.

Also found in Coorg.

Of Sir J. Hooker's two names, *F. Thwaitesii* is apparently the older, but he uses *F. zeylanica* in Fl. B. Ind.

This insignificant but curious plant much resembles *Hedyotis nitida* and also *Spermacoce hispida* and *S. stricta* in habit.

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* Commemorates the late W. Ferguson, F.L.S., of Colombo, for many years a diligent and very successful investigator of the flora of Ceylon, who died July 31st, 1887.

12. HEDYOTIS,* *L.*

Shrubs or under-shrubs, rarely herbs, stip. conspicuous, often connate, forming a sheath; fl. small, in terminal or axillary, dense or lax cymes; cal.-segm. 4, usually close; cor. funnel-shaped or tubular, often hairy, lobes 4, valvate; stam. 4, inserted in tube or throat of cor.; ov. 2-celled, ovules numerous on large placentas, style simple, stigmas 2; fruit a small capsule, usually septicidally dehiscent into 2 carp., each of which splits down ventral surface, or rarely loculicidal on the crown only, or indehiscent; seeds 2–many, angular or plane-convex. —Sp. about 80; 57 in *Fl. B. Ind.*

Of our 21 species as many as 17 are probably endemic. The flowers of many species are dimorphic.

Capsule splitting septicidally into 2 vertically dehiscent carp.
- Shrubs or erect perennials.
  - Capsule not protruded beyond the cal.
    - Stip. neither pectinate nor sheathing.
      - Cymes paniculate; l. over 1 in.
        - Cymes large, terminal.
          - L. glabrous.
            - Cal.-segm. shorter than tube . . . 1. H. FRUTICOSA.
            - Cal.-segm. longer than tube . . . 3. H. CYMOSA.
          - L. softly pubescent . . . 4. H. MACRÆI.
        - Cymes small, often axillary . . . 10. H. CINEREO-VIRIDIS.
      - Cymes corymbose; l. under 1 in. . . . 2. H. EVENIA.
    - Stip. pectinate, not sheathing; cymes axillary.
      - Cymes pedunculate . . . 5. H. OBSCURA.
      - Cymes sessile, forming whorls.
        - L. glabrous . . . 7. H. MEMBRANACEA.
        - L. hairy . . . 8. H. THWAITESII.
    - Stip. pectinate, sheathing; cymes axillary.
      - Cymes pedunculate, lax . . . 6. H. COPROSMOIDES.
      - Cymes sessile, dense, forming whorls . . . 9. H. NODULOSA.
    - Stip. not or slightly pectinate, very large, sheathing, cymes mostly terminal.
      - L. not crowded into a rosette.
        - L. over 1 in.
          - Lat. veins obscure . . . 11. H. RHINOPHYLLA.
          - Lat. veins very prominent . . . 12. H. LESSERTIANA.
        - L. under 1 in., 5-nerved . . . 13. H. QUINQUENERVIA.
      - L. crowded forming a rosette at end of stem . . . 14. H. GARDNERI.
  - Capsule protruded beyond the cal. . . . 15. H. LAWSONIÆ.
- Large stoloniferous herb . . . 16. H. VERTICILLARIS.

Capsule opening loculicidally on the top; annuals.
- L. linear, aristate . . . 17. H. CÆRULEA.
- L. lanceolate, acute . . . 18. H. NITIDA.

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* *Hedyotis* from the use of *H. Auricularia* in ear-complaints.

Capsule indehiscent.
  Capsule crustaceous.
    Prostrate annual; l. under 2 in. . . . 19. H. AURICULARIA.
    Erect shrub; l. over 3 in. . . . . 20. H. INAMŒNA.
  Capsule membranous . . . . . . 21. H. CYANESCENS.

1. **H. fruticosa,** *L. Sp. Pl.* 101 (1753). **Wéraniya,** *S.*
Burm. Thes. 227. Fl. Zeyl. n. 63. Moon Cat. 10. Thw. Enum. 142. C. P. 108.
Fl. B. Ind. iii. 49. Burm. Thes. t. 107 (not good).

A much-branched shrub, 4–6 ft. high, bark white, smooth, twigs quadrangular with very blunt angles, glabrous, shining, whitish; l. 3–4 in., narrowly lanceolate, tapering to base, long-acuminate, acute at apex, glabrous, dark green above, pale whitish-green beneath, rather thick, lat. veins fine, very oblique, pellucid, petiole very short, about $\frac{1}{4}$ in., stip. slightly connate, broadly triangular, acute, thick, stiff, finely serrate with dark brown glands in the serratures and in plenty on the inner surface; fl. sessile, numerous, cymes both terminal and in axils of upper l., much branched, paniculate, branches quadrangular, often slightly pubescent, bracts short, truncate, gland-ciliate; cal.-limb broadly campanulate, often pubescent, segm. narrow, acute, curved outwards, with shaggy white hair within, rather shorter than tube; capsule about $\frac{1}{6}$ in., the cal.-segm. covering the top, oblong-oval, pubescent, septicidally dehiscent, carp. opening ventrally; seeds few.

Moist region in the low country up to 3000 ft. and perhaps higher; very common. Fl. April–August; white.
Also in Travancore.

2. **H. evenia,** *Thw. Enum.* 140 (1859).
C. P. 93.
Fl. B. Ind. iii. 50.

A small shrub about 3 ft. high, branches numerous, erect, the old ones cylindrical, striate, thickened at the closely placed nodes, the young ones sharply quadrangular, glabrous; l. very numerous, closely placed, decussate, $\frac{3}{4}$–1 in., lanceolate, subacute, margin revolute, quite glabrous on both sides, shining above, paler beneath, thick and rigid, lat. veins invisible, petiole $\frac{1}{6}$ in., stip. connate, triangular, acute, glabrous, stiff, persistent, slightly glandular-denticulate; fl. on short glabrous ped., cymes small, corymbose, terminal; cal.-limb glabrous, segm. short, narrowly triangular, obtuse; cor. glabrous, tube short; capsule $\frac{1}{6}$ in., broadly ovoid or subglobose, septicidally dehiscent into 2 ventrally splitting carp.

Upper montane zone; very rare. Adam's Peak (Gardner); among rocks in the river, Maskeliya. Fl. March; white.

Endemic.
Pale golden-green when dry.

3. **H. cymosa,** *Thw. Enum.* 142 (1859).
C. P. 3421.
Fl. B. Ind. iii. 50. Bedd. Ic. Pl. Ind. Or. t. 35.

A small shrub, with numerous spreading, flexuose, nearly cylindrical, glabrous branches; l. 1¾–3 in., linear-lanceolate, sessile, tapering at both ends, subacute, glabrous, lat. veins inconspicuous, stip. triangular, long-acuminate, glandular-serrate, keeled, persistent; fl. on short ped., cymes terminal, large, very lax, regularly dichotomous, puberulous, bracts small, leaflike; cal. glabrous, segm. longer than tube, linear-lanceolate, spreading, recurved; cor. hairy at throat, lobes linear-lanceolate, shorter than tube; capsule about ⅙ in., nearly globose, crowned with the long cal.-segm., dehiscent in 2 ventrally splitting carp., seeds three in each carp., finely muriculate.

Moist low country; very rare. Pasdun and Reigam Korales (Thwaites); summit of Nillowe Kande about 1000 ft. Fl. March, April, and September; white.
Endemic.
Turns black in drying. I do not find the cal.-segm. longer than ripe fruit, as stated in Fl. B. Ind.

4. **H. Macræi,** *Hk. f. in Fl. B. Ind.* iii. 50 (1880).

'Branches obscurely 4-angled, softly pubescent; l. 3–4 in., lanceolate, narrowed at base, acuminate, recurved and complicate, rather scabridly pubescent above, softly tomentose beneath, many nerved, petiole ¼–⅓ in., stip. broader than long, abruptly cuspidate, eglandular, tomentose; fl. small, ¼ in., cymes large, panicled with whorled spreading branches, rounded, terminal; cal. pubescent; cor.-lobes pubescent within, capsule small, ellipsoid, cal.-teeth shorter than it, cells many-seeded.'

Based on a specimen collected by Macrae (ex Herb. Hort. Soc. Lond.) in Herb. Kew, without definite locality.
The above description is copied from Fl. B. Ind.

5. **H. obscura,** *Thw. Enum.* 141 (1859).
C. P. 94.
Fl. B. Ind. iii. 51.

A low shrub, stems stout, compressed, glabrous; l. 2–3½ in., from oval to narrowly lanceolate, tapering to base, acute at apex, quite glabrous, rather thick, lat. veins obscure, petiole ¼–½ in., stip. very large, slightly connate, ovate, very deeply pectinate with long linear ciliate teeth, soon caducous; fl. on

very short ped., cymes axillary on rather long glabrous peduncles, bracts small, leaflike; cal. glabrous, segm. narrowly triangular, subacute; cor. rather large, very hairy at mouth, lobes oblong-oval, as long as tube; capsule about $\frac{1}{6}$ in., turbinate-ovoid, dehiscing into 2 carp.

Var. β, **minor,** *Thw. in Fl. B. Ind.* iii. 52.

L. smaller, $\frac{3}{4}$–1 in., nearly sessile, oblong-lanceolate, rounded at base; fruit much smaller.

Upper montane zone; rare. Adam's Peak (Gardner); Maskeliya; Horton Plains at foot of Totapella; Wattekelle Hill. Fl. Feb.–April; white.

Endemic.

Dries black.

6. **H. coprosmoides,** *Trim. Cat. Ceyl. Pl.* 41 (1885).
H. obscura, var. β, Thw. Enum. 141. C. P. 91, 101.

An erect shrub, about 3 ft. high, branches divaricate, supra-axillary, slightly quadrangular or compressed or nearly cylindrical, glabrous; l. varying from $\frac{1}{4}$–2 in., ovate-oval or ovate, acute at both ends, glabrous above, pilose on veins beneath, stiff, lat. veins curved, very conspicuous beneath, petiole short, distinct, stip. connate, forming a loose truncate sheath with few or many long filiform teeth; fl. few, pedicellate, cymes supra-axillary, pedunculate, lax; cal. glabrous, segm. narrow, acuminate; cor. rather large, lobes as long as tube, oblong, hairy over whole surface; capsule nearly globose, crowned with erect cal.-segm.

Upper montane zone in wet shady places; rare. Adam's Peak (Gardner); Horton Plains; Pedurutalagala. Fl. Feb.–April; pinkish-white.

Endemic.

Besides the characters given, this differs from *H. obscura* in drying green instead of black. The two C. P. numbers represent two forms; C. P. 91 has larger leaves and flowers and less pectinate stipules than C. P. 101.

7. **H. membranacea,** *Thw. Enum.* 143 (1859).
C. P. 3621.
Fl. B. Ind. iii. 54.

Stem simple, stout, bluntly quadrangular, glabrous; l. 5–6 in., narrowly oblong-lanceolate, gradually tapering to base, long-acuminate, glabrous, pale beneath, lat. veins fine, inconspicuous, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., stip. not connate, pectinate with linear teeth, cymes capitate, sessile, axillary; fl. and fr. not seen.

Moist low country; rare. Pasdun Korale; Ambagamuwa. First collected by Moon, but his specimens are without locality. Fl. Sept.; white.

Endemic.

I have seen only the C. P. specimens, which have the flowers abortive and represented by chaffy scales. The whole plant appears to be diseased or abnormal.

8. **H. Thwaitesii,** *Hk. f. in Fl. B. Ind.* iii. 54 (1880).
H. macrophylla, Thw. Enum. 142 (non Wall.). C. P. 104, 466.
Fl. B. Ind. iii. 54.

Stem stout, slightly branched, with long internodes, compressed, glabrous, young parts hairy; l. large, 4–6 in., lanceolate-oval, tapering at both ends, acute, harshly hairy on both sides and on margin, lat. veins conspicuous, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., pubescent, channelled above, stip. large, slightly connate, pubescent, pectinate, with long hairy teeth, deciduous; fl. sessile, crowded in dense capitate axillary and terminal sessile cymes, bracts (often wanting) at base of heads, large, ovate; cal. hairy, segm. large, much longer than ov., oblong, apiculate; cor. pubescent inside and out; capsule small, $\frac{1}{10}$ in., crowned by long cal.-segm., hairy, splitting into 2 ventrally dehiscent carp.

Moist region; rare. Adam's Peak (Gardner); Reigam Korale (Thwaites). Fl. March, Sept.; white.
Endemic.
H. Thwaitesii, Hance, is a Chinese plant, now referred to *Anotis.*

9. **H. nodulosa,** *Arn. Pug.* 22 (1836).
Thw. Enum. 143 (excl. var. *a*). C. P. 88, 3542, 3095.
Fl. B. Ind. iii. 54.

An undershrub, 3–4 ft., erect, much branched, old stems near cylindrical, rough, yellowish-grey, brittle, young ones sub-quadrangular, densely covered with spreading hair, buds silky-woolly; l. 2–3$\frac{1}{2}$ in., ovate-lanceolate or oval, rounded or acute at base, rather acuminate, acute at apex, velvety-hairy on both sides, veins prominent beneath, petiole very short, stip. connate, forming a short tube, truncate at top but with several setaceous hairy teeth; fl. sessile, cymes very dense, axillary, forming globose whorls; cal.-limb short, broad, segm. long, linear-setaceous, covered with long bristly hairs; cor. hairy outside, and very hairy in the throat, lobes acute, much recurved, nearly as long as tube; capsule oblong-turbinate, crowned with long cal.-segm., hairy, splitting into 2 hard cocci, each containing a few small seeds.

Var. β, **Walkeri,** *Hk. f. H. Walkeri*, Arn. Pug. 21.

Leaves glabrous above.

Moist region; in low country rare, in montane zone very common up to 7000 ft. Var. β I have not seen. Fl. Sept. to April; white or yellowish.
Endemic.

Easily confounded with *Allæophania decipiens* unless the fruit be examined; but the two stigmas (instead of 4) will also distinguish it, as well as the softer character of the hair. Very obviously dimorphic.

10. **H. cinereo-viridis,** *Thw. Enum.* 419 (1864).
C. P. 95.
Fl. B. Ind. iii. 55.

A shrub, branches slender, spreading, supra-axillary, when young acutely quadrangular afterward cylindrical, glabrous; l. ½–3 in., long-lanceolate, acute at base, acuminate, acute, glabrous, paler beneath, with few lat. veins very fine but rather prominent, stip. not connate, narrowly triangular, prolonged into a beak, 2-ribbed, pilose; fl. on short ped., cymes axillary and terminal, shortly pedunculate; cal. glabrous, limb large, tubular, segm. linear, acute, as long as limb; cor.-tube long, slender, lobes as long as tube, oblong-linear, acute, glabrous; ripe fruit not seen.

Var. β, **subverticillata,** *Trim. Syst. Cat. Ceyl.* 42. C. P. 2639.

L. larger and broader; cymes all axillary, sessile. Dries green.

Var. γ, **fumata,** *Thw. in Trim.* l. c. C. P. 3909.

Fl. pedicellate, cymes sessile, lax. Dries black.

Moist region; rare. The type from Matale East. Var. β from Ambagamuwa and Nillowe Kande. Var. γ from Adam's Peak. Fl. March–June; white.
Endemic.
Var. γ ought perhaps rather to be considered a distinct species. Var. *truncata*, Trim. l. c., is probably rather a monstrosity (gall) with the calyx-limb almost without lobes; it does not dry black. This species and its various forms require further examination.

11. **H. rhinophylla,** *Thw. ex Trim. in Journ. Bot.* xxiii. 208 (1885).
C. P. 3984.

A small much-branched shrub, branches slender, cylindrical, finely puberulous when young; l. 1½–3 in., narrowly lanceolate, much tapering to base, very caudate-acuminate, acute, glabrous, pale green, whitish beneath; lat. veins obscure, petiole short, puberulous, stip. connate, forming a loose sheath, puberulous, truncate with a few short deciduous teeth, persistent; fl. on long slender ped., cymes terminal, paniculate, very lax, bracts small, leaflike; cal.-limb large, campanulate, glabrous, segm. short, triangular, subacute; cor.-tube narrowly funnel-shaped, lobes rather short, puberulous within; capsule ⅙ in., broadly ovoid, crowned with cal.-limb, readily splitting nto 2 ventrally dehiscent carp.; seeds numerous, muriculate.

Upper montane zone; very rare, and only in the N.E. mountain block. Wattekelle Hill; Summit of Rangala Hill. Fl. Sept.; white.
Endemic.

12. **H. Lessertiana,** *Arn. Pug.* 21 (1836). [PLATE XLIX.]
Thw. Enum. 141. C. P. 96, 99.
Fl. B. Ind. iii. 52.

Erect shrub, often almost a small tree, very variable, stems stout, cylindrical, glabrous, the younger ones compressed; l. varying much in size, 2½–10 in. (or even more), lanceolate or oval-lanceolate, tapering at base, gradually acuminate, acute at apex, glabrous, rather stiff, strongly plicate, lat. veins numerous, very oblique, strong, impressed above, very prominent beneath, petiole ¼–1¼ in., stip. connate, quite free from petiole, sheathing, loose, often 1½ in. long (in the larger forms) and covering whole internode or overlapping, glabrous, truncate, with a few deciduous setaceous teeth, persistent and becoming white and scarious; cymes numerous, terminal and from upper l.-axils, in large spreading panicles, ped. as long as or longer than cal., cal.-limb campanulate, segm. triangular or linear, acute, deciduous in fruit; cor.-lobes narrowly oblong, as long as tube, hairy within; capsule nearly ¼ in., broadly oblong-ovoid, splitting into 2 ventrally dehiscent carp.

Var. β, **pilosa,** *Thw. l. c.* C. P. 2819.

Stems hairy; l. linear-lanceolate, often very narrow, more or less hairy beneath; cal.-segm. very short.

Var. γ, **confertiflora,** *Thw. l. c.* C. P. 103.

L. coriaceous; cymes rather dense; fl. larger; cal.-segm. triangular.

Var. δ, **marginata,** *Thw. ex Fl. B. Ind. l. c.* C. P. 3935.

L. finely ciliate; cymes few, terminal, globose, very dense; cal.-segm. long, linear.

Var. ε, **flavescens,** *Thw. l. c.* (sp.). C. P. 86, 126.

Very stout and woody; l. oval or ovate-lanceolate, very coriaceous, petiole dilated; fl. very large, cymes dense; cal.-segm. long-lanceolate, acute, persistent; capsule over ¼ in., turbinate-ovoid.

Throughout the montane zone; very common. Var. δ, Kotiya Kande, Dickoya. Var. ε, Maskeliya; Adam's Peak; Galagama. Fl. March–June; white.
Endemic (?).
Extraordinarily variable, and might be divided into several species. The commonest form at the higher elevations is var. *major*, Thw. (C. P. 96). Var. ε turns yellow in drying. The flowers are remarkably dimorphic, as noticed by Arnott. I refrain from quoting Bedd. Ic. t. 31, which scarcely appears to represent any form of this species.

13. **H. quinquenervia,** *Thw. Enum.* 141 (1859).
C. P. 120.
Fl. B. Ind. iii. 52. Bedd. Ic. Pl. Ind. Or. t. 8.

A much-branched bush, older branches cylindrical, smooth, whitish, younger ones compressed, glabrous, sheathed with persistent stip.; l. numerous, closely placed, small, ½–¾ in., nearly sessile, broadly ovate, acute, the apex and margin strongly recurved, glabrous, thick and leathery, strongly 5-nerved from the base, veins depressed above, prominent beneath, stip. large, connate, forming a cup-shaped lax sheath, truncate at mouth, with several linear hairy teeth, scarious, white, setose, persistent; fl. on very short ped., cymes sessile, capitate, terminal; cal.-segm. linear, subacute, pilose at tip; cor.-tube hairy at mouth, lobes strongly recurved, pubescent outside at the ends; capsule small, ⅛ in., ovoid, separating into 2 ventrally dehiscent carp.

Upper montane zone; very rare. Abundant on Pedurutalagala between 7000 and 8000 ft. Fl. April; white, purple outside, anth. purple.
Endemic.

14. **H. Gardneri,** *Thw. Enum.* 142 (1859).
C. P. 116.
Fl. B. Ind. iii. 53.

A shrub, stems very stout, woody, ½ in. diam., cylindrical, slightly branched, completely enveloped in the very large, persistent and permanent, closely placed, imbricated, white, chartaceous stip., which increase the apparent thickness of the stem to about 1 in.; l. very closely placed, forming a large rosette at end of stems, 3–4 in., lanceolate, tapering at base into short broad petiole, attenuate-acuminate, acute, glabrous, very coriaceous, thick, rigid, somewhat conduplicate, falcately recurved, veins inconspicuous, stip. very large, rounded-ovate, acute, glabrous, papery, white, overlapping; cymes paniculate, axillary, nearly 1 ft. high, erect, with numerous opp. trichotomous branches, bracts large, sheathing; cal.-segm. triangular, acute, glabrous; fruit not seen.

Upper montane zone; very rare. By the stone steps on the steep part of the ascent to the cone of Adam's Peak on the Maskeliya side. First found by Gardner. Fl. Feb.
Endemic.

A singular-looking plant resembling a woody *Dracæna* in foliage. I regret it was not in flower when I collected it.

15. **H. Lawsoniæ,*** *W. and A. Prodr.* 407 (1836).
Thw. Enum. 140. C. P. 13, 1697.
Fl. B. Ind. iii. 56.

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* The name was bestowed in error. Our plant is not *Wendlandia Lawsoniæ*, DC. (*Lawsonia purpurea*, Lam.), which is *H. fruticosa*, L.

A small shrub, 3–6 ft. high, with very numerous ascending branches, stems stout, very bluntly 4-angled, glabrous and shining, often purplish, branches supra-axillary, young parts glabrous; l. varying from 1 to over 4 in., but usually 2–3 in., oval or lanceolate, acute at both ends, glabrous, rather thick, petiole under $\frac{1}{4}$ in., stip. short, broad, obtuse, rather thick, keeled down the centre, deciduous; fl. pedicellate, rather large (for genus), cymes very numerous, small, stalked, supra-axillary and terminal, forming large compound inflor. usually exceeding leaves; cal. glabrous, segm. short, triangular, acute; cor.-tube broad, lobes ovate, acute, as long as tube, recurved, woolly inside; disk tumid; fruit $\frac{1}{4}$ in., ovoid-globose, rounded and blunt at the top, which projects beyond the erect persistent cal.-segm., splitting from above into 2 ventrally dehiscent carp.

Upper montane zone; common, often growing gregariously. Fl. March, September, and October; white, anth. violet.

Endemic.

This beautiful profusely flowering shrub is not variable, but the leaves of some specimens from Adam's Peak are very small with strongly revolute margins. It is one of the great ornaments of the higher hill-forests, and is well worthy of cultivation in gardens.

Sir J. Hooker has pointed out that Wight, Ic. t. 1026, cannot represent this species. Neither is it Rheede, Hort. Malab. iv. t. 57, quoted by W. and A. The flowers are markedly dimorphic.

16. **H. verticillaris,** *W. and A. Prodr.* 409 (1834).
H. plantaginifolia, Arn. Pug. 22. Thw. Enum. 142. C. P. 107.
Fl. B. Ind. iii. 56. Wight, Ic. t. 1029.

A large stemless perennial herb, with a long vertical tap-root and short erect rootstock giving off from the base long stout suckers; radical l. very numerous, very close, erect, forming a large rosette, 8–16 in., sessile, much sheathing at base, linear-lanceolate, ensiform, acuminate, acute, stiff, quite glabrous, bright light green, paler beneath, with 3, 5, or 7 very strong, thick, longitudinal ribs from base to apex, prominent and almost winged beneath, channelled above, stip. large, adnate to sides of l.-bases, 3 in. long, narrow, linear, acuminate, somewhat laciniate at top, ciliate, with short fleshy rootlike papillæ especially abundant at the base; scapes numerous, axillary, erect, rather shorter than l., much compressed, glabrous, fl. sessile, in dense globular stalked heads, arranged trichotomously or in whorls in terminal cymose panicles, bracts at base of branches large, leaflike, smaller upwards; cal. glabrous, segm. narrowly lanceolate, acute, cor.-tube hairy within, shorter than cal., lobes acute, recurved; fruit turbinate, crowned with cal. and prominent convex disk,

which is perforate in centre; seeds numerous, finely muriculate, dark brown.

Upper montane zone on the patanas above 6000 ft.; very common. Fl. April, May; white.

Also in the Nilgiri Mts.

A very curious species, totally unlike all the others in habit. The large stipules are completely concealed in the sheathing leaf-bases, and are constantly immersed in the water that fills them.

17. **H. cærulea,** *W. and A. Prod.* 412 (1834).
Thw. Enum. 144. C. P. 1674.
Fl. B. Ind. iii. 60. Bedd. Ic. Pl. Ind. Or. t. 30.

Annual, stem erect, 3–12 in., very slender, usually much branched, cylindrical, rough with small harsh prominences; l. about $\frac{1}{4}$ in., narrowly linear, sessile, sharply aristate at apex, minutely scabrous, margins reflexed, stip. adnate to l.-base, pectinate, with long filiform bristle-like teeth; cymes small, few-flowered, sessile, terminal or axillary, fl. sessile, often solitary in the bifurcations; cal.-segm. lanceolate, rigid, tapering to sharp spinous apex; capsule globular-ovoid, crowned with erect cal.-limb nearly equalling it in length, pubescent, loculicidally dehiscent on the top only.

Sandy places near the coast, especially in the dry region; rather common. Colombo; Chilaw; Mannar; Jaffna; Batticaloa. Fl. Dec.–Feb.; blue.

Also in S. India.

18. **H. nitida,** *W. and A. Prod.* 412 (1834). **Pita-sudu-pala,** *S*
H. Neesiana, Arn. Pug. 23. Thw. Enum. 143. C. P. 122.
Fl. B. Ind. iii. 61. Bedd. Ic. Pl. Ind. Or. t. 36 ? (*H. glabella*).

Annual, branches numerous, prostrate or ascending, slender, quadrangular, slightly rough on the angles; l. 1–1$\frac{3}{4}$ in., ovate- or oblong- or linear-lanceolate, acute or rounded at base, acute at apex, margin rough, often slightly revolute, bright light green, glabrous and shining above, scabrous at end, whitish and with the midrib often slightly rough beneath, stiff and rigid, petiole very short, stip. of long filiform ciliate bristles; fl. axillary, solitary or 2 or 3 together, sessile; cal.-segm. large, broadly lanceolate, rigid, spinous-ciliate, recurved; cor.-lobes longer than tube; capsule globose, crowned with large cal.-segm., glabrous, veiny, dehiscent on summit only.

Lower montane zone; rather rare. Ambagamuwa; Ramboda; near Bilahul-oya. Thwaites says 'common;' the Fl. B. Ind. queries its occurrence here. Fl. March; white.

Also in Peninsular India.

Thwaites says that the leaves of this are chopped up, boiled, and eaten with rice.

19. **H. Auricularia,*** *L. Sp. Pl.* 101 (1753). **Géta-Kola,** *S.*
Burm. Thes. 227. Fl. Zeyl. n. 64. Moon Cat. 10. Thw. Enum. 142. C. P. 1694.
Fl. B. Ind. iii. 58. Burm. Thes. t. 108, f. 1. Bedd. Ic. Pl. Ind. Or. t. 27.

Annual, branches numerous, prostrate, spreading, not rooting at nodes, nearly cylindrical, stout, hairy especially at nodes and along two lines on opp. sides, dark purple; l. 1–2 in., oval, lanceolate or linear-lanceolate, slightly rounded at base, acute, very minutely spinous on edge, slightly hairy above, more so beneath, lat. veins much curved, impressed above, prominent beneath, petiole usually very short, stip. short, not connate, very slightly adnate to base of petiole, membranous, hairy, with 3 or 5 unequal filiform bristly teeth; fl. on very short glabrous ped., crowded in small very dense axillary cymes; cal.-segm. small, triangular, acuminate, hairy, recurved; cor.-tube very short, lobes oblong, obtuse, recurved, hairy at base; capsule small, nearly globular, hairy, hard, indehiscent.

Low country; a common weed. Fl. June–September; white.
Also in most parts of the Eastern Tropics.

20. **H. inamœna,** *Thw. Enum.* 143 and 419 (1864).
C. P. 3543.
Fl. B. Ind. iii. 61.

A slender shrub, erect, with few spreading branches, stems sub-quadrangular, glabrous; l. $3\frac{1}{2}$–$4\frac{1}{2}$ in., oblong-lanceolate, attenuate at base, acuminate, acute at apex, quite glabrous, lat. veins inconspicuous, petiole short, stip. connate below, triangular, obtuse, 2-ribbed, glandular-pubescent, soon falling; fl. few, small, nearly sessile, axillary, within the stipular sheath; cal. pilose, segm. ovate, acute; cor. small, pilose, tube rather long; capsule nearly globose, almost glabrous, crowned with short cal.-segm., indehiscent.

Moist region; very rare. Pitigala Kande, near Balangoda (Thwaites). The Fl. B. Ind. gives Adam's Peak. Fl. Sept.
Endemic.
Dries black. Thwaites formerly included his *H. cinereo-viridis* under this species, and var. β of that species is very like, but can be easily distinguished by the different calyx.

21. **H. cyanescens,** *Thw. Enum.* 143 (1859).
C. P. 2384.
Fl. B. Ind. iii. 62.

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* *Auricularia*, from its use as a cure for deafness; a name of the old pharmacists.

A much-branched undershrub, the lower branches often prostrate and rooting at the nodes, stems acutely quadrangular, glabrous, l. 1½–2½ in., oval, tapering to base, acute at apex, rough, with scattered harsh hairs on both sides and margins, petiole ¼–½ in., stip. short, connate, triangular, very deeply pectinate with long subulate teeth, deciduous; cal.-segm. linear, ciliate, purple; cor.-lobes ovate, acute; capsule very small, narrowly turbinate, membranous, crowned by the cal.-segm. which are many times longer, indehiscent.

Moist low country; very rare. Murutu (Gardner); Ambagamuwa. Fl. December; pinkish-white.

Endemic.

The whole plant is often of an intense purple colour, especially the under sides of the leaves.

13. **OLDENLANDIA,** *L.*

Herbs, usually annual, stip. various, acute or truncate, fl. small, solitary or in small cymes, axillary; cal.-segm. 4, erect, distant in fruit; cor.-lobes 4, obtuse, valvate; stam. 4, ov. 2-celled, ovules numerous in each cell, on large placentas, style simple, stigmas 2; fruit a small capsule, usually somewhat didymous, loculicidally dehiscent on the crown; seeds numerous, smooth or pitted.—Sp. 70; 23 in *Fl. B. Ind.*

Ov. terete.
  Capsule as broad as long.
    L. linear.
      Fl. solitary or in pairs.
        Top of capsule flat, not protruded.
          Fl. pedicellate, in pairs . . . . 1. O. CORYMBOSA
          Fl. nearly sessile, solitary . . . 2. O. DIFFUSA.
        Top of capsule rounded, protruded beyond
          cal. . . . . 3. O. HERBACEA.
      Fl. 3–10 together, umbellate . . . . 4. O. UMBELLATA.
    L. ovate or rotundate . . . . . . 5. O. TRINERVIA.
  Capsule twice as long as broad . . . . 6. O. STRICTA.
Ov. quadrangular . . . . 7. O. BIFLORA.

1. **O. corymbosa,** *L. Sp. Pl.* 119 (1753). **Wal-patpadagam,** *S.* Burm. Thes. 22 (in part). *Hedyotis Burmanniana*, Br., Thw. Enum. 144. *O. biflora*, Moon Cat. 11 (non L.). C. P. 1676, 2638 (part). Fl. B. Ind. iii. 64. Burm. Thes. t. 11 (good).

Annual, small, stems numerous, slender, erect or ascending or spreading, 6–12 in., glabrous or slightly hispid, cylindrical; l. ½–1 in., linear, sessile, apiculate, margin usually scabrous, stip. short, truncate, pectinate with few teeth; fl. on filiform ped. longer than cal., in pairs (rarely solitary), peduncles very

slender, shorter than l.; cal.-segm. small, narrowly triangular, mucronate; capsule nearly globose, often slightly pyriform, truncate, somewhat didymous, glabrous.

Var. β, **racemosa,** *Thw. Enum.* 419. C. P. 3837, 2638.

Fl. 3–6 together, racemose or umbellate, peduncle shorter.

Low country; a common weed. Var. β, Colombo. Fl. July–Sept.; white.

Throughout the Tropics. Linnæus founded the species on the American plant. Some species seem intermediate in characters between this and *O. diffusa* (*e. g.* C. P. 2638).

Very much used as a medicine in remittent fevers.

2. **O. diffusa,** *Roxb. Hort. Beng.* 11 (1814).

Hedyotis Burmanniana, var. *brachypoda*, Thw. Enum. 419. C. P. 3838.

Fl. B. Ind. iii. 65.

Stems numerous, prostrate, often rooting at nodes, slender, glabrous; l. ¾–1¼ in., linear or linear-lanceolate, acute, stip. short, slightly pectinate; fl. solitary (rarely 2 together), on very short ped.; cal.-segm. rather long, narrow, cuspidate, finely ciliate, very distant in fruit; capsule larger than in *corymbosa*, broader than long, very truncate and flat on top.

A weed in waste ground in low country; less common than *O. corymbosa.* Fl. June–September; white.

Tropical Asia generally.

3. **O. herbacea,** *Roxb. Fl. Ind. ed. Wall.* i. 445 (1820).

Fl. Zeyl. n. 65. *Hedyotis herbacea*, L. Sp. Pl. 102. Moon Cat. 10. *H. Heynii*, Br., Thw. Enum. 144. C. P. 1673.

Fl. B. Ind. iii. 65 (*O. Heynii*). Rheede, Hort. Mal. x. tt. 23 and 35.

An erect, rigid, much-branched annual herb with dichotomous, slender, quadrangular, glabrous, divaricate branches with long internodes; l. ¾–1½ in., linear (the lower rather broader), sessile, acute, glabrous, margin often recurved, stip. very short, inconspicuous; fl. solitary, on stiff, divaricate, axillary ped., longer or shorter than l.; cal.-teeth lanceolate, acute, short; capsule ovate-ovoid, with the top rounded and protruded beyond the erect cal.-segm.

Low country; very common, and up to 4000 ft., in dry sandy places. All the year; white.

Also in Peninsular India, Malay Islands, and Trop. Africa.

Hermann's specimens are the whole foundation for Linnæus's *H. herbacea*, and they are clearly this species, which is generally called *O. Heynii*, though Roxburgh had retained Linnæus's specific name under *Oldenlandia*. This does not vary in Ceylon, and is an easily distinguished species.

O. crystallina, Roxb., an Indian species, has been occasionally found as a weed in gardens, doubtless introduced with other plants in soil.

4. **O. umbellata,** *L. Sp. Pl.* 119 (1753). **Saya,** *S.* **Chaya,** *T.*
Herm. Mus. 22. Burm. Thes. 208. Fl. Zeyl. n. 67. Moon Cat. 11.
Hedyotis umbellata, Lam., Thw. Enum. 144. C. P. 125.
Fl. B. Ind. iii. 66. Roxb. Cor. Pl. t. 3.

Annual but semi-woody at base, stems very numerous prostrate or ascending, 6–10 in., quadrangular or compressed glabrous or rough; l. numerous, rather close, sessile, ½–1 in., linear, very acute, margin setaceous and often reflexed, stip. very short, pectinate; fl. on short ped., 3–10 together in very numerous irregular small umbels on stiff erect peduncles; cal. glabrous, segm. triangular, cuspidate, spinous-ciliate; capsule nearly globose, broader than long, top slightly protruded above cal.

Sandy ground, especially near the coast and in the dry region; common. All the year; white.

Also in S. India and N. Burma.

This affords the 'Chay-root,' at one time an important dyeing material and a monopoly of Government.* The root was collected especially in the north of the island, and is still gathered to a small extent in Mannar I., where is a village wholly occupied by a caste who dye cloths with it. The colour is a dull pinkish-purple, and very durable. There was formerly a considerable export to India.

5. **O. trinervia,** *Retz. Obs. Bot.* iv. 23 (1786).
Hedyotis trinervia, R. and S., Thw. Enum. 144. C. P. 1681.
Fl. B. Ind. iii. 66. Bedd. Ic. Pl. Ind. Or. t. 29.

A small annual, stems weak, flaccid, slender, branched, slightly hairy; l. numerous, broadly ovate or rotundate, tapering to base or obscure petiole, nearly glabrous, thin, 3-veined at base; fl. on very short ped., in small clusters; cal. hairy, segm. narrowly triangular, acute; fruit very small, globose, very hairy, flat-topped, opening by a wide circular mouth.

Low country in damp places; very rare (?). Jaffna (Gardner); Reigam Korale (Thwaites). Fl. September.

Also in India, Burma, Malay Islands, and Trop. Africa.

Has the habit and appearance of an Alsinaceous plant.

6. **O. stricta,** *L. Mant.* 200 (1781).
Hedyotis maritima, Moon Cat. 10; Thw. Enum. 144 (? Linn. f.). C. P. 1678.
Fl. B. Ind. iii. 68. Pluk. Phytogr. t. 332, f. 3 (bad).

Annual or perennial with a woody base, and numerous, erect, slender, wiry, sub-quadrangular, glabrous, dichotomously branched stems, often 2 ft. high; l. 1–1½ in., sessile, linear,

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* Extracts from the Dutch Records referring to the collection of this plant for Government are given by the late Colonial Surgeon Ondaatje in the appendix to the Ceylon Almanac for 1853, pp. 14–16.

very acute, glabrous, stip. adnate to base of l. and with them forming a close sheath round the stem, mouth truncate, ciliate; fl. on slender, erect ped., few, distant, in slender erect elongated racemose cymes; cal.-segm. short, lanceolate, subulate; cor.-lobes oblong, obtuse, longer than tube; capsule $\frac{1}{6}$ in., twice as long as broad, oblong, crowned with tooth-like cal.-segm., glabrous, top slightly rounded.

Sandy seashores; rather common, especially in the north of the island. Fl. Dec.–March; pink.

Also in S. India.

Remarkably like a *Silene* or *Tunica* in habit.

7. **O. biflora,** *L. Sp. Pl.* 119 (1753).

Fl. Zeyl. n. 68. *Hedyotis racemosa*, Lam., Thw. Enum. 144. C. P. 1679.

Fl. B. Ind. iii. 69 (*O. paniculata*) and 70. Burm. f. Fl. Ind. t. 15, f. 1. (bad) (*O. paniculata*). Wight, Ic. t. 312.

Annual, stems 4–12 in., erect or ascending, rather stout, quadrangular, glabrous, slightly branched; l. $\frac{1}{2}$–$1\frac{1}{2}$ in., oblong-oval, tapering at base into obscure petiole, subacute, apiculate, glabrous, rather thick, stip. short, broadly triangular, acute; fl. rather large (for genus), pedicellate, 2 or 3 together on short axillary peduncles, or, the l. being small and bract-like, together forming a short racemose panicle; cal.-segm. lanceolate, acute, glabrous; ov. distinctly quadrangular, glabrous; capsule turbinate-ovoid, strongly 4-ribbed, truncate, crowned with distant cal.-segm.; seeds pitted.

Low country, chiefly near the coast; rather common. Galle; Colombo; Batticaloa; Trincomalie; Mannar. All the year; white.

Throughout the Tropics of Asia.

I cannot distinguish two species here, as is done in Fl. B. Ind. Hermann's type specimen of *O. biflora*, L., is a luxuriant one, and would be now generally named *O. paniculata*. The brief description of it in Fl. Zeyl. is good. *O. paniculata*, L., is, moreover, quite doubtful; it is entirely based on a figure of Burman in Thes. Zeyl. t. 71, f. 2, which is apparently a *Mollugo* (certainly not an *Oldenlandia*). But *O. paniculata*, Burm. f. (the figure quoted above from his Fl. Ind.), is the present species.

14. ANOTIS, *D.C.*

Annual or perennial herbs, stip. pectinate or bristly or nearly absent, fl. small, nearly sessile, in small axillary or terminal cymes; cal.-segm. 4, distant in fruit; cor.-lobes 4, shorter than tube, valvate; stam. 4; ov. 2- or 4-celled, ovules few or 1 in each cell, placentas basal, style simple, stigmas 2 or 4, linear; fruit a small capsule, dehiscent on the top or indehiscent; seeds very few, pitted.—Sp. 25; 18 in *Fl. B. Ind.*

Capsule 4-celled . . . . 1. A. QUADRILOCULARIS.
Capsule 2-celled.
  Capsule flat, orbicular, indehiscent.
    Lat. veins of l. obvious . . . . 2. A. NUMMULARIA.
    Lat. veins of l. invisible . . . . 3. A. NUMMULARIFORMIS.
  Capsule ovoid-turbinate, septicidal . . 4. A. RICHARDIANA.

1. **A. quadrilocularis,** *Hk. f. in Fl. B. Ind.* iii. 74 (1880).
Hedyotis quadrilocularis, Thw. Enum. 144. C. P. 3132.
Fl. B. Ind. iii. 74.

Annual, 6–18 in., with many flaccid, spreading, glabrous, cylindrical branches; l. ¾–1¼ in., ovate-oval, acute at both ends, slightly hairy, very thin, pale beneath, petiole ¼ in., stip. short, truncate with a few bristles; fl. nearly sessile, solitary or 2–4 together in the axils (those on short branchlets with a single pair of l. appearing terminal); cal.-segm. broadly oblong; cor.-lobes ovate, bristly on back; ov. 4- (rarely 3-) celled, stigmas 4, linear, drooping; capsule depressed, broader than long, glabrous, 4-lobed, capped with large cal.-segm., 4-celled; seeds 3 in each cell, nearly globose, deeply pitted.

Low country; rare, on wet rocks. Bintenne District; Kindegodde, Badulla Dist. (Thw.); near Lunugala, Uva. Fl. Jan.–April; white.
Also in S. India.

2. **A. nummularia,** *Hk. f. Fl. B. Ind.* iii. 75 (1880).
Hedyotis nummularia, Arn. Pug. 23; Thw. Enum. 142. C. P. 1692, 2817.
Fl. B. Ind. iii. 75.

A perennial stoloniferous herb, stems prostrate at base and rooting at the nodes, then erect, about 1 ft. high, stiff, quadrangular, slightly winged, pubescent or nearly glabrous, rather succulent, very slightly branched at top; l. sessile, ½–⅝ in., rotundate, subacute, usually hairy on both sides, sometimes glabrous, rather thick, lat. veins obvious, stip. 0 or a few bristles; fl. numerous, sessile, cymes terminal on rather long peduncles, with 2 leaf-like bracts at base, dense, capitate; cal.-segm. shorter than ov., lanceolate, acute, glabrous, cor.-tube somewhat inflated, lobes lanceolate, acute, recurved, with a few bristly hairs outside; stam. erect, exserted; style short, stigmas 2, plumose, disk annular; capsule about ⅛ in. flat, orbicular 2-celled, indehiscent, smooth, with 2 ridges on each face, seeds 1 or 2 in each cell.

Upper montane zone in wet places; common. Fl. Feb. and August; pale violet-blue.
Endemic.
Plant slightly fetid when bruised. Nearly black when dried. C P. 2817 is a glabrous form, but different from the next.

3. **A. nummulariformis,** *Trim. Syst. Cat. Ceyl.* 42 (1885).
Hedyotis nummulariformis, Arn. Pug. 23. *H. nummularia*, var. *glabra*, Thw. Enum. 142 (in part). C. P. 113.
Fl. B. Ind. iii. 75 (*A. nummularia*, var.).

Perennial (?), stems 6–18 in., branched, weak, ascending, bare below, strongly quadrangular, slightly winged, usually glabrous (sometimes slightly hairy), shining and polished; l. very shortly stalked, $\frac{1}{2}$–$\frac{3}{4}$ in., narrowly ovate, usually rounded at base, acute, margins recurved, glabrous above, very pale and sometimes hairy beneath, rather thick, midrib prominent beneath but lat. veins invisible, stip. pectinate with long linear teeth fimbriate at apex; fl. nearly sessile, crowded in small capitate cymes on long peduncles both terminal and axillary; cal.-segm. triangular, acuminate; cor.-lobes short, acute, recurved; capsule as in the last.

Upper montane zone in wet places; rather common. N. Eliya; Maturata; Adam's Peak; Knuckles Mts. Fl. Feb., and Aug., Sept.; pale violet.

Endemic.

I do not think this should be combined with *O. nummularia*, as is done by Thwaites.

4. **A. Richardiana,** *Hk. f. in Fl. B. Ind.* iii. 75 (1880).
Hedyotis Richardiana, Arn. Pug. 22. *H. monosperma*, W. and A., var. *subglabra*. Thw. Enum. 142. C. P. 97.
Fl. B. Ind. iii. 75.

A perennial herb, stems prostrate, rooting at the nodes, spreading, much branched, flowering shoots ascending, cylindrical, hairy; l. usually small, $\frac{1}{2}$–$\frac{3}{4}$ in., broadly ovate, rounded or slightly cordate at base, acute, hairy on both sides, rather thick, with the numerous lat. veins prominent beneath, petiole very short, stip. large, hairy, cut half way down into linear teeth; fl. sessile, cymes small, lax, terminal, on short unequal peduncles; cal. oblong-lanceolate, acuminate, hairy, cor.-tube narrow, hairy within, lobes nearly as long as tube, spreading, stam. not exserted, style long, stigmas 2, plumose; capsule $\frac{1}{6}$ in., ovoid-turbinate, slightly compressed with a convex top exceeding the persistent cal.-segm., glabrous or hairy, 2-celled, with a single seed in each cell, at length splitting septicidally.

Upper montane zone; very common, and occurring in large masses. Fl. August, Sept.; bright violet.

Endemic.

A very pretty little plant, forming large beds in the hills, but with a disgusting odour when bruised as by walking over it.

The above description is that of the ordinary form, but the l. are often much larger, 3–4 in., on longer petioles and nearly glabrous, the stems erect and much taller, and the cymes very lax. I suspect some of ours is rather *A. monosperma*, W. and A. (Wight, Ic. t. 1031), to which Thwaites referred it.

15. **OPHIORRHIZA,*** *L.*

Herbs or undershrubs, stip. not conspicuous, fl. small, erect, secund on branches of dichotomous cymes, on terminal peduncles, with or without bracts; cal.-limb o, segm. 5; cor. tubular, lobes 5, valvate; stam. 5, inserted in tube, anth. linear; disk of 2 very large, prominent erect lobes which become much enlarged in fr.; ov. 2-celled, placentas arising from base of dissepiment, with many ovules; fruit a capsule, very strongly compressed, crowned with enlarged disk, which protrudes beyond cal.-segm., coriaceous, much broader than long, loculicidally dehiscent on the top, seeds numerous, angular.—Sp. about 50; 31 in *Fl. B. Ind.*—The species are obscurely defined.

Bracts absent or early caducous.
  Stem erect.
    Herbaceous; cal. segm. short, triangular . 1. O. MUNGOS.
    Shrubby; cal.-segm. narrow, very acute . 2. O. HARRISIANA.
  Stem prostrate, rooting below. . . . 3. O. RADICANS.
Bracts persistent with fruit.
  Bracts glabrous.
    L. glabrous . . . . 4. O. PECTINATA.
    L. hairy . . . . 5. O. PALLIDA.
  Bracts ciliate . . . . 6. O. GLECHOMIFOLIA.

1. **O. Mungos,**† *L. Sp. Pl.* 150 (1753). **Dat-kétiya, Walékaweriya,** *S.*

Herm. Mus. 37. Fl. Zeyl. n. 402. Moon Cat. 19. Thw. Enum. 139. C. P. 1704.

Fl. B. Ind. iii. 77. Gaertn. Fruct. i. t. 55 (fruit only).

Herbaceous, never shrubby, stem 1½–2 ft., erect, cylindrical, slightly branched, glabrous or very finely puberulous; l. rather large, 4–8 in., lanceolate, much tapering at base and decurrent on short petiole, shortly acuminate, subacute, glabrous above, finely puberulous on veins beneath, thin, bright green above, pale beneath, lat. veins very numerous, depressed above, prominent beneath, stip. very short; cymes several, horizontally spreading, arranged sub-umbellately in a flat-topped terminal infl. quite without bracts, fl. on short

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* From the alleged specific action of the roots against the poison of serpents, Linnæus following Kaempfer in this.

† Kaempfer (1712) is the first to connect this plant with the Mungoose by calling it *Radix Mungo* and quoting Garcia de Orta's account of 'Lignum colubrinum' for it. I think, however, from the description given by the latter, that the plant meant was rather *Rauwolfia serpentina* (see under that species).

ped.; cal.-segm. very short, triangular, cor.-tube inflated at base, broad, with a ring of long silky hair at mouth, lobes much shorter than tube; disk very prominent; capsule $\frac{3}{8}$ in. wide, coriaceous, 3 times as wide as long, very much compressed, protruded beyond cal.; seeds very numerous, angular, pale brown.

Var. β, **nemorosa,** *Hk. f.* *O. nemorosa*, Thw. Enum. 139. C. P. 205.

L. narrower, stip. with 1 or 2 long setaceous bristles; fl. much larger; cor.-tube longer.

Var. γ, **angustifolia,** *Hk. f.* *O. angustifolia*, Thw. Enum. 140. C. P. 431.

L. smaller, oblong-lanceolate, stip. with setaceous bristles, cymes small, with small linear bracts, tomentose.

Shady places in the moist region from sea-level up to 6000 ft.; common. Var. β, Medamahanuwara; Galagama. Var. γ, Ambagamuwa. All the year; white, in var. β, pinkish.

Also in India, Burma, Malay Islands; the varieties endemic.

The root is said to have a reputation for snake-bites in India; but not, I think, here. The leaves are bitter, and a remedy for toothache. There is no published figure of this familiar plant.

Linnæus refers to this also the 'Naghawalli' of Herm. Mus. 55, which the latter says is brought from Adam's Peak, the leaves being a specific cure for the bite of the cobra. They are described as spotted, and it is likely some other plant was intended. Moon, indeed, gives this name for *Justicia picta* (*Graptophyllum hortense*), a common garden plant.

2. **O. Harrisiana,** *Heyne in Wall. Cat.* n. 6236 (1828).
O. decumbens, Gardn. in Thw. Enum. 419. C. P. 3656.
Fl. B. Ind. iii. 78. Wight, Ic. t. 1162 (*O Harrisonii*).

A small undershrub, with many ascending slender branches, often rooting at the base, young twigs glabrous or pubescent; l. $1\frac{1}{2}$–$3\frac{1}{2}$ in., ovate-oval or lanceolate, tapering to both ends, acute, pale and pubescent on veins beneath, stip., with a few setaceous bristles; cymes few, small, lax, pubescent, on long slender peduncles, bracts setaceous, soon falling; cal.-segm. very acute, capsule small, triangular, with the ends prolonged, pubescent.

Moist shady places in lower montane zone; common. Fl. June–September; white.

Also in India and Burma.

Scarcely more than a variety of *O. Mungos*, but its shrubby habit gives it a different look.

3. **O. radicans,** *Gardn. in Thw. Enum.* 139 (1859).
C. P. 1706.
Fl. B. Ind. iii. 80.

Stems prostrate, filiform, copiously rooting, with ascending branches and ends, finely woolly-pubescent; l. small, $\frac{1}{4}$–1 in.,

numerous, ovate or rotund-ovate, obtuse or subacute, glabrous except on veins beneath, petiole about half as long, pubescent, stip. inconspicuous; fl. few, shortly stalked, in small bifid cymes on erect slender apparently terminal peduncles much exceeding the l., bracts subulate, caducous; cal.-segm. acute; capsule very small, $\frac{1}{6}$ in. wide, 3 times as broad as long, hairy.

Moist region to 4000 ft.; rather common (?) Hantane; Kukul Korale, &c. Fl. June; white.

Endemic.

I have a very small-leaved creeping form from Kalubowitiya Kande, Hiniduma.

4. **O. pectinata,** *Arn. Pug.* 20 (1836).
Thw. Enum. 140. C. P. 712, 750.
Fl. B. Ind. iii. 81.

Stem erect, often semi-shrubby below, slightly branched, glabrous or pubescent; l. 3–6 in., oval to linear-lanceolate, much tapering below into obscure petiole, acuminate, acute, glabrous on both sides, thin, midrib very broad, lat. veins numerous, curved, stip. over $\frac{1}{2}$ in., broad at base, then filiform; fl. very shortly stalked, closely placed in dense cymes umbellately arranged at end of stiff peduncle, and forming an almost globose head, bracts conspicuous, much exceeding cal., linear-lanceolate, acuminate, glabrous, persistent in fruit; cal.-segm. small, subulate; cor.-tube $\frac{1}{3}$ in., lobes short, hairy within; capsules crowded and overlapping, $\frac{3}{8}$ in. wide.

Lower montane zone in forests; very common. Fl. March–May; white or greenish.

Also in S. India.

C. P. 750 has the flowers very closely packed in the corymbs, and is var. β of Thw. (*O. imbricata*, Gardn.).

5. **O. pallida,** *Thw. Enum.* 140 (1859).
C. P. 711, 3344.
Fl. B. Ind. iii. 81.

Stems more or less procumbent and often rooting below, roughly tomentose; l. $1\frac{1}{2}$–$3\frac{1}{2}$ in., lanceolate or ovate-lanceolate, acute or rounded at base, acuminate, acute, hairy on both sides, petiole rather long, hairy, stip. simple setaceous; cymes small, subglobose, glabrous, on long peduncles, bracts rather long, linear; cor.-lobes very short; capsule about $\frac{1}{4}$ in. wide, glabrous.

Moist region; very rare. Murutu (Gardner); Ambagamuwa. Fl. December; white.

Endemic.

C. P. 3344 (from Ambagamuwa) is a very small form more creeping, and with broader, smaller leaves.

6. **O. glechomifolia,** *Thw. Enum.* 140 (1859).
C. P. 1708.
Fl. B. Ind. iii. 84.

Stems completely prostrate, rooting at the nodes, covered with crisp hairs, rather stout; l. small, $\frac{1}{2}$–$\frac{3}{4}$ in., broadly ovate, rounded or slightly cordate at base, acute or subacute at apex, coarsely hairy on both sides, petiole rather long, hairy, stip. inconspicuous; cymes small, bifurcate, few-flowered, peduncles glabrous or pubescent, bracts linear, ciliate, persistent; cal.-segm. large, lanceolate-oblong, acute, strongly ciliate; cor.-lobes as long as tube, hairy within; capsule very small, $\frac{1}{12}$ in., crowned with large cal.-segm., hairy.

Moist low country to 3000 ft.; rare. Allagala; Ramboda; Sabaragamuwa Dist. Fl. Feb., July, Sept.; white.

Endemic.

Very like *O. radicans* in habit, but distinguished by its much more hairy leaves and larger ciliate cal.-segm.

16. MUSSÆNDA,* *Linn.*

Scandent, shrubby, stip. small, sometimes bifid, fl. in terminal cymes; cal.-segm. 5, narrow, deciduous, one sometimes developed into a large petioled white leaf; cor.-tube with a dense lining of hair at mouth, lobes short, valvate, with reflexed margins; stam. 5, inserted about $\frac{1}{3}$ down and enclosed in cor.-tube, fil. 0, anth. linear; ov. 2-celled, ovules numerous, on large fleshy placentas; fruit soft, indehiscent, 2-celled; seeds many, minute, pitted.—Sp. 40; 11 in *Fl. B. Ind.*

M. frondosa, *L. Sp. Pl.* 177 (1753). **Mussenda, Wel-butsarana,** *S.*

Herm. Mus. 36. Burm. Thes. 165. Fl. Zeyl. n. 84. Moon Cat. 15. Thw. Enum. 138. C. P. 1664.
Fl. B. Ind. iii. 89. Burm. Thes. t. 76. Wight, Ill. t. 124.

A scrambling shrub, climbing by its long, flexuose, divaricate branches, which are cylindrical and finely velvety; l. 3–5 in., ovate-lanceolate, rounded at base, shortly acuminate, subacute, finely velvety on both sides, paler and with prominent venation beneath, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., pubescent, stip. rather small, triangular, usually more or less bifid, membranous, pubescent, soon falling; fl. on stout pubescent ped. as long as ov., in rather small, contracted, paniculate, terminal cymes, bracts small, subulate, caducous, buds blunt, strongly 5-angled; cal.-segm. nearly $\frac{1}{2}$ in., narrowly linear, pubescent, deciduous, the

* The Sinhalese name unaltered.

enlarged one (only developed on the outer side of a few fl.) in all respects save colour resembling the foliage-l., but rather broader, velvety on both sides, creamy white, persistent; cor.-tube $\frac{7}{8}$ in., with a dense lining of short yellow hairs completely blocking the mouth and extending $\frac{1}{4}$ way down, lobes short, broadly oval, apiculate, convex above, spreading; anth. small; fruit $\frac{3}{8}$ in., nearly globose, faintly 2-lobed, slightly scabrous.

Var. β, **glabrata,** *Hk. f. in Fl. B. Ind.*

L. smaller, 2–3 in., narrower, tapering to base, quite glabrous on both sides; buds acute, not 5-angled; cal.-segm. very short, acuminate, glabrous; cor.-lobes acuminate; fruit glabrous.

Moist region up to 4000 ft.; very common. Var. β in the low country. Fl. April–August; brilliant orange.

Also in India, Andaman Is., and Malay Archipelago.

A very conspicuous plant everywhere, from the white leaf-like enlarged calyx-lobes and brilliant, though not large, flowers. The hairs on the leaves are sometimes pink. Extremely variable in amount of hairiness, often villous in the hills. In Fl. B. Ind. all the Ceylon plant is called var. *zeylanica*, which is, however, restricted by the description to the velvety or tomentose form, which is the type as described by Linnæus. Var. β, which looks quite distinct, is perhaps the *M. corymbosa* of Roxb., which he states (Fl. Ind. i. 556) to be a native of Ceylon, or possibly *M. glabra*, Vahl, which has a wide Malaya and Burma distribution but is not recorded for Peninsular India in Fl. B. Ind.

A decoction is used externally in inflammations.

17. ACRANTHERA, *Arn.*

Perennial herb, l. large, stip. triangular; fl. large in terminal cymes; cal.-segm. 5, long, persistent; cor. tubular-funnel-shaped, lobes 5, valvate; stam. 5, inserted near base of cor.-tube, anth. connate at their points; ov. 1-*celled*, but apparently 2-celled, the two parietal placentas completely meeting in the centre and reflexed, stigma clavate; fruit oblong, indehiscent, 2-celled; seeds minute, very numerous.—Sp. 10; 6 in *Fl. B. Ind.*

A. zeylanica, *Arn. in Ann. Nat. Hist.* iii. 21 (1839).
Thw. Enum. 138. C. P. 334.
Fl. B. Ind. iii. 92. Bedd. Ic. Pl. Ind. Or. t. 24 (not good).

A low perennial herb, rootstock thick, flexuose, stem. 2–8 in., often prostrate and rooting at base, then erect, stout, compressed, densely silky-hairy; l. large, 4–6 in., closely placed, obovate-oblong or oblong-lanceolate, tapering to base, rounded or subacute at apex, sparingly hairy above, and densely so on

veins beneath, strongly ciliate, thin, very bullate above, paler with prominent coarse reticulate venation beneath, petiole short, densely silky-hairy, stip. large, triangular, acuminate, hairy; fl. large, nearly sessile, 3–12 together in rather dense, trichotomous cymes, on stout, very hairy, erect (deflexed in fruit) terminal peduncle, bracts numerous, very hairy; cal. hairy, segm. linear, long, acuminate; cor.-tube $\frac{3}{8}$ in., much exceeding cal.-segm., narrow below, dilated in upper part, lobes nearly $\frac{1}{2}$ in., oblong, obtuse, spreading; stam. included, fil. apiculate; style included; fruit $\frac{5}{8}$ in., crowned with cal.-segm., oblong-fusiform, membranous, very hairy; seeds nearly globose, reticulate.

Lower montane zone, in damp, shady places; rather rare. Adam's Peak; Sabaragamuwa; Ambagamuwa; Hunasgiriya; Rangala Hill. Fl. April–June; bright pale violet-blue, faintly sweet-scented.

Endemic.

First collected in 1836 by Wight and Walker.

18. **LEUCOCODON,** *Gardn.*

An epiphytic climbing shrub, stip. large, connate at base; fl. rather small, in a terminal head, surrounded by a large campanulate involucre; cal. adnate to lower $\frac{2}{3}$ of ov., limb shortly tubular, irregularly truncate, segm. 0; cor.-tube funnel-shaped, lobes 5, valvate; stam. 5, inserted at mouth of cor.-tube; ov. only partially inferior, crowned with an annular disk, 2-celled, with numerous ovules, stigma bilobed; fruit fleshy, indehiscent, 2-celled; seeds numerous, compressed.—Monotypic and endemic.

L. reticulatum, *Gardn. in Calc. Journ. Nat. Hist.* vii. 5 (1846).
Thw. Enum. 138. C. P. 347.
Fl. B. Ind. iii. 94. Bedd. Ic. Pl. Ind. Or. t. 94.

A woody epiphyte, sending off (like Ivy) adventitious rootlets by which it climbs, stems cylindrical, marked with leaf-scars and stipular rings, young parts glabrous; l. 4–6 in., lanceolate or linear-lanceolate, acute or attenuate at base, shortly acuminate, acute at apex, glabrous on both sides, petiole about $\frac{1}{2}$ in., stip. 1 in. long, broadly oblong, connate at base, bidentate at apex, glabrous, membranous, soon falling; fl. rather small, sessile, capitate, on a short terminal peduncle, surrounded by a very large involucre (formed of connate bracts) which is campanulate, $1\frac{1}{2}$–$1\frac{3}{4}$ in. wide, with 8 broad, obtuse, recurved lobes, strongly 8-ribbed, glabrous, greenish-white; cal.-limb short, truncate; cor.-tube narrow, lobes

lanceolate, acute, shorter than tube; fil. very short, anth. exserted; fruit (not seen) $\frac{1}{4}$ in., obovate-oblong, compressed, fleshy, white; seeds striate, brownish-black.

Wet forests up to 4000 ft.; rare. Ambagamuwa (Gardn.); Ramboda; Adam's Peak; Maskeliya; Singhe Raja Forest; Kottawa Forest, S. Prov. Fl. January–May; greenish-white.
Endemic.
A remarkable plant; the involucre resembles a large corolla.

19. **UROPHYLLUM,** *Wall.*

Shrubs, stip. undivided; fl. small, often unisexual, in axillary cymes or umbels; cal.-limb large, campanulate, thick, segm. 5, shallow; cor.-tube short, broad, hairy at mouth, lobes 5, longer, thick, valvate; stam. 5, inserted in cor.-tube, fil. short; ov. capped with thick prominent disk, 5-celled, with numerous ovules in each; style short, stigmas 5; fruit a fleshy globose berry; seeds minute, numerous, tubercled.—Sp. 35; 9 in *Fl. B. Ind.*

Both our species are endemic.

Stip. large, oblong; cymes nearly sessile . . 1. U. ELLIPTICUM.
Stip. small, triangular; cymes pedunculate . . 2. U. ZEYLANICUM.

1. **U. ellipticum,** *Thw. Enum.* 419 (1864).
Axanthes elliptica, Wight in Calc. Journ. Nat. Hist. vii. 147. Thw. Enum. 139. C. P. 359.
Fl. B. Ind. iii. 97. Wight, Ic. t. 1164 (*Axanthes*).

A large shrub, with stiff branches, young ones cylindrical and glabrous below, sub-quadrangular and pubescent above; l. large, 6–10 in., lanceolate, acute at base, acuminate, acute, glabrous above, often pubescent on veins beneath, rather thick, veins prominent beneath, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., slightly hairy, stip. $\frac{3}{4}$ in., linear-oblong, acute, thick, rigid, deciduous; cymes small, nearly sessile; fl. crowded, on very short glabrous ped.; cal. glabrous, segm. very broad and shallow, apiculate; cor. with long coarse hair within, lobes ovate, acute; berry small, dull orange-yellow.

Moist region from 1000–6000 ft.; rather rare. Adam's Peak; N. Eliya; Deltota; Labugama. Fl. Jan.–May; white.
Endemic. First collected by Wight in 1836.

2. **U. zeylanicum,** *Thw. Enum.* 418 (1864).
Axanthes zeylanica, Wight in Calc. Journ. Nat. Hist. vii. 146. Thw. Enum. 139. C. P. 449.
Fl. B. Ind. iii. 98. Wight, Ic. t. 1163.

A shrub, with long spreading, cylindrical glabrous branches; l. 3–5 in., lanceolate, acute at base, acuminate, subacute, quite glabrous on both sides, venation reticulate, pellucid, prominent beneath, petiole $\frac{1}{2}$–$\frac{3}{4}$ in., stip. small, narrowly triangular, thick, persistent; cymes irregularly umbellate, peduncles about as long as petioles, ped. rather long, puberulous; cal. and cor. as in *U. ellipticum;* berry $\frac{1}{2}$–$\frac{5}{8}$ in., depressed-globose, crowned by rim of truncate, prominent, fleshy cal.-limb, smooth, pale waxy, orange-yellow; seeds ovoid, compressed, pale brown.

Montane zone, 3000–7000 ft.; rather common. Fl. Feb.–April, and Aug.–Sept.; pale yellow.

Endemic.

The Siṇhalese carpenters at N. Eliya call this 'Wal-handun.'

20. **SCHIZOSTIGMA,** *Arn.*

A creeping, very hairy herb, stip. ovate, persistent; fl. rather large, axillary; cal.-limb short, segm. large, unequal; cor.-tube funnel-shaped, lobes 5, narrow, valvate; stam. 5, inserted in upper part of cor.-tube, anth. slightly exserted; ov. 5-celled, with numerous ovules, stigmas 5, spreading; fruit a hairy berry, 5-celled, many-seeded.—Monotypic and endemic.

S. hirsutum, *Arn. in Ann. Nat. Hist.* iii. 20 (1839).
Thw. Enum. 139. C. P. 268.
Fl. B. Ind. iii. 100. Bedd. Ic. Pl. Ind. Or. t. 95.

Stems prostrate, long, rooting at nodes, cylindrical, very hairy, with short erect branches; l. 2–3 in., lanceolate-oval, acute at both ends, hairy on both sides, especially on veins beneath, thin, petiole $\frac{1}{2}$–1 in., very hairy, stip. rather large, ovate, acute, nearly glabrous, persistent; fl. solitary or 2 or 3 together, on hairy axillary ped.; cal.-segm. $\frac{3}{8}$ in., both broadly and narrowly lanceolate, acute, slightly hairy; cor.-lobes as long as tube, oblong, acuminate, hairy; berry crowned with large cal.-segm., about $\frac{1}{2}$ in., nearly globular, densely covered with long hair.

Moist low country up to 2000 ft. or higher; rather common. Fl. Feb., March; white.

Endemic. Apparently first collected by Finlayson (Wall. Cat. n. 8463), who visited Ceylon in 1817–8.

21. **WEBERA,** *Schreb.*

Shrub or small tree, stip. simple, subpersistent, fl. moderate-sized, in terminal paniculate cymes; cal.-limb short, segm. 5 cor.-tube short, hairy in throat, lobes 5, twisted in bud

stam. 5, inserted at mouth of cor., fil. short, anth. narrow; ov. 2-celled, with few ovules in each cell half immersed in fleshy placentas; fruit a hard 2-celled berry, seeds few.—Sp. about 40; 20 in *Fl. B. Ind.*

W. corymbosa, *Willd. Sp. Pl.* i. 1224 (1797). **Tarana,** *S* **Karanai,** *T.*

Fl. Zeyl. n. 80. *Rondeletia asiatica*, L. Sp. Pl. 182. *Tarenna zeylanica*, Gaertn. Fruct. t. 139. Moon Cat. 19. *Stylocoryne Webera*, A. Rich., Thw. Enum. 158. C. P. 185.

Fl. B. Ind. iii. 102. Wight, Ic. tt. 309, 584.

A small tree or large bush, bark smooth, pale grey, twigs compressed, glabrous, buds exuding a waxy secretion; l. $2\frac{1}{2}$–6 in., oblong-lanceolate, acute at both ends, glabrous, polished above, rather thick, lat. veins prominent beneath, usually with small pits in their axils, petiole about $\frac{1}{2}$ in., stip. narrowly triangular, acute, closely pressed to stem, and at first glued to it by waxy secretion, subpersistent; fl. on short nearly glabrous ped., about $\frac{1}{2}$ in. diam., cymes trichotomous; cal.-segm. oblong, obtuse, faintly pilose; cor. hairy at mouth, lobes longer than tube, oblong, acute, reflexed; stam. exserted; stigma and portion of style exserted; berry $\frac{1}{4}$–$\frac{1}{2}$ in., more or less globose, glabrous, dull green, becoming black, usually without cal.-segm. on top.

Var. β, **montana,** *Thw. l. c.* *Webera cerifera*, Moon Cat. 19. C. P. 1649.

Inflor., buds and stipular nodes exuding copious resinous wax; fl. larger; cal.-segm. acute, persistent, and crowning the fruit.

From sea-level up to 7000 ft.; very common. Var. β in upper montane zone; common. Fl. Feb.–April, and September; white. In var. β, yellow. Also in Peninsular India and Malay Is.

Very variable. In the dry country the l. are narrower and the fruit smaller. Var. β perhaps distinct. There is no specimen or drawing of this in Hermann's collection.

Wood hard, heavy, yellowish, very strong, and, being also durable, is used (in Northern Prov.) for constructing granaries, which are said to last for fifty years.

22. BYRSOPHYLLUM, *Hk. f.*

A small tree, stip. large, deciduous, fl. large, diœcious, in small terminal cymes; cal.-limb short, truncate; cor.-tube long, contracted and villous at mouth, lobes 5, twisted in bud; stam. 5, inserted in cor.-tube, anth. sessile, included; ov. 2-celled, with numerous ovules immersed in fleshy placentas;

fruit a large 2-celled berry; seeds few, flattened, immersed in pulp.—Sp. 2; the other one in S. India.

B. ellipticum, *Bedd. Forest. Man.* 134–2 (1875?).
Stylocoryne elliptica, Thw. Enum. 421 and 154 (*Coffea ?*). C. P. 3482. Fl. B. Ind. iii. 107. Bedd. Ic. Pl. Ind. Or. t. 96 (*Stylocoryne*) (not good).

A small tree, 10–12 ft., branchlets stout, marked with close leaf-scars, young parts glabrous; l. closely placed, large, 4–9 in., oval, tapering to base, shortly and abruptly acuminate, obtuse, quite glabrous on both sides, rather coriaceous, paler beneath, lat.-veins inconspicuous, petiole about 1 in., stout, stip. 1 in., oblong, acuminate, glabrous, deciduous; fl. few, large, in sessile, trichotomous, terminal cymes, ped. stout, $\frac{1}{4}$–$\frac{1}{2}$ in.; cal.-limb glabrous, truncate, without segm.; cor.-tube over 1 in., slightly wider upwards, lobes $\frac{1}{2}$–$\frac{3}{4}$ in., oval-oblong, obtuse; berry pyriform-globose, 1$\frac{1}{4}$ in., rather tapering to base, smooth; seeds few, large.

Moist low country; very rare. Hiniduma Pattu (Thwaites). Fl. Sept.; white.

Endemic.

I have not met with this, and have nothing but the C. P. specimens, which include no fem. flowers. Turns black in drying.

23. RANDIA,* *L.*

Shrubs or small trees, rarely scandent, one leaf of opp. pairs often absent, stip. small, triangular; fl. rather large, solitary and terminal or in leaf-opposed cymes; cal.-limb short, wide, segm. large and leafy or very small; cor.-lobes 5 (rarely 6 or 7), longer than tube; anth. nearly sessile, long, exserted; ov. 2-celled, with many or several ovules in each cell sunk in fleshy placentas, stigma large, clavate or fusiform, 2-fid.; fruit a berry, 2-celled, with numerous seeds immersed in pulp.—Sp. 90; 18 in *Fl. B. Ind.*

Spiny.
  Fl. 1 or 3, terminal; cal.-limb persistent.
    Fl. over 1$\frac{1}{2}$ in.; fr. over 2 in. . . . . . 1. R. ULIGINOSA.
    Fl. and fr. both under 1 in. . . . . . 2. R. DUMETORUM.
  Fl. in cymes; cal.-limb deciduous . . . . 3. R. MALABARICA.
Without spines.
  L. narrow-lanceolate, cymes axillary . . . 4. R. GARDNERI.
  L. oval, cymes terminal or leaf-opposed . . 5. R. RUGULOSA.

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* Isaac Rand was Curator of the Apothecaries' Garden at Chelsea from 1724 till his death in 1743.

1. **R. uliginosa,** *DC. Prod.* iv. 386 (1830). **Et-kukuruman, Wadiga,** *S.*

Gardenia uliginosa, Retz., Moon Cat. 19. Thw. Enum. 159. C. P. 2936. Fl. B. Ind. iii. 110 (not given for Ceylon). Wight, Ic. t. 397.

A small tree, much branched, branches thick, horizontal, many of them short and terminating in 2 pair of short sharp spreading spines, bark rough, shredding off in fibres, reddish-brown; l. fascicled on suppressed branchlets, 3–5 in., spathulate-oblong or lanceolate, tapering to base, obtuse, glabrous on both sides or slightly pubescent beneath, thin, reticulate-veined, petiole very short, stip. acute; fl. large, 1½–2 in. diam., solitary at end of suppressed branches, ped. short; cal.-limb broadly tubular, segm. very shallow, rounded, ciliate; cor. glabrous outside, tube with ring of hairs at mouth, lobes 5–7, orbicular, much overlapping; fruit large, 2½–3 in., pyriform ovoid, smooth, pale or orange-brown, 2-celled, pericarp thick; seeds numerous, closely packed in pulp.

Margins of tanks, &c., in the dry region; rather rare. Trincomalie; Kantalai; Dambulla. Fl. Aug.–Sept.; white.

Also in India and Burma.

The flesh of the large yellow fruit is used in curries, but it is astringent.

2. **R. dumetorum,** *Lam. Ill. Genres*, ii. 227 (1793). **Kukuruman,** *S.* **Karai,** *T.*

Moon Cat. 19. Thw. Enum. 159. C. P. 1652.

Fl. B. Ind. iii. 110. Roxb. Cor. Pl. t. 136 (*Gardenia dumetorum*). Wight, Ic. t. 580.

A shrub or small tree, branches horizontal, rigid, many of the lat. ones suppressed and very short, spines in opp. pairs coming off immediately above the branchlets, ½–1 in. long, horizontal, woody, strong, very sharp; l. usually fasciculate on the suppressed branchlets, nearly sessile, 1–2 in., obovate-oval or spathulate, tapering to base, obtuse, apiculate, glabrous or slightly pubescent, thin, reticulate-veined, stip. acuminate; fl. 1 in. diam., 1–3 at ends of suppressed branchlets, ped. short; cal.-limb broadly tubular, from nearly glabrous to very hairy, segm. leafy, ovate, acute, imbricate, glabrous or slightly hairy; cor. hairy outside; tube as long as cal., lobes rounded, spreading; fruit globose or broadly ovoid, about ¾ in., crowned with large cal.-limb, pilose, yellow, 2-celled, pericarp thick; seeds flat, surrounded with pulp.

Dry region; very common, especially in sandy places near the coast. Fl. August; yellowish white.

Also in Peninsular India, Burma, Java, S. China, E. Trop. Africa.

Usually a mere spiny bush. Fruit said by Nevill to be used as a fish-poison by the Veddas. The pulp of the fruit is a safe and much-used emetic, and the root is given in bowel complaints.

3. **R. malabarica**, *Lam. Ill. Genres*, ii. 226 (1793). **Pudan,** *T.*
Griffithia fragrans, W. and A., Thw. Enum. 158. *Gardenia fragrans*, Moon Cat. 19. C. P. 1234.
Fl. B. Ind. iii. 111. Wight, Ic. t. 310.

An erect, much-branched shrub, with many branchlets reduced to short sharp spreading axillary spines; l. $1\frac{1}{2}$–3 in., lanceolate or oblong-lanceolate, tapering to base, subacute, quite glabrous, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stip. acute, quickly caducous; fl. $\frac{3}{4}$–1 in. diam., in few-flowered, spreading, glabrous, leaf-opposed cymes, bracts small, connate in pairs, and so cup-shaped; cal. glabrous, limb wide, cupular, deciduous, segm. 5 or 6, narrowly triangular, acute; cor. hairy at mouth, lobes lanceolate, acute; anth. very long, exserted; fruit globose, $\frac{1}{4}$–$\frac{1}{3}$ in., marked on top with ring-scar of cal.-limb; seeds about 8 in each cell, closely packed.

Dry and intermediate region; common. Fl. April, September; lemon-yellow.

Also in S. India.

Moon gives 'Maha-géta-kulu' as the S. name for this. A dwarf, very spinous state, with small rotundate leaves, which rarely flowers (much like a *Canthium* in appearance) is very common.

4. **R. Gardneri,** *Hk. f. in Gen. Pl.* ii. 88 (1873).
Griffithia Gardneri, Thw. Enum. 158. C. P. 657.
Fl. B. Ind. iii. 112. Bedd. Ic. Pl. Ind. Or. t. 38 (*Griffithia*).

A rather small tree, with very many slender, drooping, cylindrical branchlets, quite without spines, young parts glabrous; l. $3\frac{1}{2}$–4 in., narrowly oblong-lanceolate, acute at base, attenuate-caudate, acute at apex, often somewhat falcate, glabrous, shining above, paler beneath, petiole very short, stip. very short, apiculate; fl. $\frac{1}{2}$–$\frac{3}{4}$ in. diam., on long ped., cymes rather lax, spreading, from axils of past and present l., bracts opp., connate, small; cal. pilose, limb short, almost truncate, segm. tooth-like; cor.-tube hairy at mouth, lobes linear-oblong, acute; fruit pyriform-globose or broadly ovoid, nearly $\frac{1}{2}$ in., seeds numerous.

Moist region up to 3000 ft.; rather rare. Colombo; Karawita; Udugama; Hantane; Deltota. Fl. April; white or pale yellow.

Endemic.

Closely related to *R. densiflora*, Benth. of Burma and Malaya.

5. **R. rugulosa,** *Hk. f. in Fl. B. Ind.* iii. 113 (1880).
Griffithia rugulosa, Thw. Enum. 159. C. P. 245.
Fl. B. Ind. iii. 113. Bedd. Ic. Pl. Ind. Or. t. 37 (*Griffithia speciosa*).

A climbing shrub, with many long drooping branches quite without spines; l. 3–$4\frac{1}{2}$ in., oval, acute at base, shortly acuminate, acute at apex, glabrous, with tufts of hair in axils of veins beneath, rather thick, veins impressed above, pro-

minent beneath, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stip. small, cuspidate; fl. over $\frac{1}{2}$ in. diam., ped. pubescent, rather longer than cal., cymes paniculate, spreading, either terminating short branchlets or leaf-opposed (one l. of the opp. pair being suppressed), bracts numerous, connate, cuspidate; cal. adpressed-pilose, segm. tooth-like, distant; cor.-lobes oblong, acute; fruit $\frac{1}{3}$ in., globose.

Moist low country below 1000 ft.; rather rare. Galle; Kottawa; Ratnapura; Ambagamuwa. Fl. March and April, white.

Also in S. India.

24. **GARDENIA,*** *L.*

Small trees, stip. large or small, usually connate and sheathing; fl. very large, solitary; cal.-limb long, tubular, segm. various or 0; cor.-tube long, lobes 6–9, much twisted in bud; stam. as many as cor.-lobes, anth. nearly sessile; ov. 1-celled with numerous ovules on 3 or 5 parietal placentas, stigma large, clavate, lobed; fruit large, outer coat fleshy, endocarp bony, splitting into 3 or 5 valves along the placentas; seeds very numerous, compressed, packed in pulp.—Sp. 60; 14 in *Fl. B. Ind.*

Placentas 3.
  Fruit not ribbed . . . . 1. G. LATIFOLIA.
  Fruit ribbed . . . . 2. G. CORONARIA.
Placentas 5. . . . . 3. G. TURGIDA.

1. **G. latifolia,** *Ait. Hort. Kew.* i. 294 (1789) non Roxb. **Galis,** *S.* Moon Cat. 19. Thw. Enum. 421. C. P. 3617.
Fl. B. Ind. iii. 116, 120. Wight, Ic. t. 759 (not good).

A small, many-stemmed tree or large shrub, bark smooth, pale-grey, flaking off in small rounded pieces, young parts glabrous but coated with a resinous exudation; l. crowded at ends of branches, 4–7 in., obovate-oval, slightly tapering to base, rounded or very shortly acuminate and obtuse at apex, slightly scabrous on both sides, especially on the veins (often pubescent) beneath, stiff, thin, bright apple-green, paler beneath, lat. veins 16–20 each side, parallel, very prominent beneath, petiole very short, stip. adnate to base of petiole, connate forming a tube which is thin, truncate, at first enclosing young bud, but after fall of leaf separating at base, and forming a loose ring round the stem; fl. very large, solitary, apparently terminal (really leaf-opposed), on short stout

* Commemorates Alexander Garden, M.D., F.R.S., who practised as a physician in Carolina, and corresponded with Linnæus. Died 1791.

peduncle; cal.-limb $\frac{5}{8}$ in., broadly tubular, slightly dilated at top, either truncate (without segm.) or segm. 7–9, acute, conduplicate, recurved, usually with 7–9 prominent ridges or wings, margin ciliate; cor.-tube 2–3 in., straight, lobes 7–9, $1\frac{1}{2}$–2 in., horizontal, obovate-oblong, obtuse; anth. half exserted; stigma very large, exserted, 3-lobed; fruit nearly globose, about $1\frac{1}{2}$ in. diam., quite without ribs, crowned with the large erect, persistent, rigid, enlarged, winged cal.-limb which is $\frac{3}{4}$ in. long, slightly pubescent, pale green, epicarp dry-fleshy, valves of endocarp 3, bony, yellow, polished within; seeds small, very numerous, horizontal, flattened, pale brown, pulp purplish-grey filling the fruit.

Moist low country in damp places; rare. Colombo (Ferguson); Kalutara; Pelawatte; Pasdun Korale, in several places. Fl. March; pale lemon-yellow, becoming orange when fading.

Also in W. and S. India.

This can scarcely be *G. latifolia* of Roxburgh as figured in Cor. Pl. t. 134, which shows a more ovoid fruit without a persistent cal.-limb. The Fl. B. Ind. seems to be doubtful as to its proper name.

The buds and flowers exude a copious yellow resin, which when dry becomes powdery, and covers the branches, leaves, and fruit with a sort of scurf. Wood hard, close-grained, rather heavy, yellowish, easily worked.

2. **G. coronaria,** *Ham. in Symes, Emb. to Ava*, iii. 307 (1800)?

G. carinata, Thw. Enum. 159 (? Wall.). Trim. in Journ. Bot. 163. C. P. 3618.

Fl. B. Ind. iii. 117, 120. Ham. l. c. t. 22.

Much like *G. latifolia*, from which it differs thus: l. smaller, 3–4 in. (rarely longer), slightly pubescent above, and usually densely so beneath (sometimes nearly glabrous); cal.-limb about $\frac{1}{2}$ in., angled, pubescent; cor.-tube 3–4 in., narrow, pubescent, lobes 7, 1–$1\frac{1}{2}$ in.; fruit $1\frac{1}{2}$ in., ovoid, tapering to base, crowned with cal.-limb, and with its angles (usually 6) continued down the fruit as long, blunt, vertical ribs, pubescent, valves of endocarp as in the last, seeds numerous, pulp yellow, filling the fruit.

Exposed rocks in the dry region; rare. Batticaloa; about Bibile and Nilgala; Trincomalie (Nevill). Fl. June; pale yellow.

Also in Burma.

This plant is very closely allied to *G. latifolia*, and may be merely a dry-country variety, the longer narrower cor.-tube and shorter lobes, with the distinctly ribbed fruit, being the chief differences. It does not quite agree either with *G. carinata* or *G. coronaria*, but I hesitate to make another species where there seem already too many.

3. **G. turgida,** *Roxb. Hort. Beng.* 15 (1814).

Trim. in Journ. Bot. xxvii. 163.

Fl. B. Ind. iii. 118. Wight, Ic. t. 579.

A small tree, with thick branches and numerous stout, short, lat. twigs, bark smooth, reddish-grey; l. very crowded at ends of branchlets, sessile, 3–4 in., obovate-oval, much tapering to base, subacute, glabrous on both sides, rather coriaceous, stip. small, triangular, slightly connate, cuspidate, caducous; fl. not seen; fruit large, $1\frac{1}{2}$–$1\frac{3}{4}$ in., nearly globose, often bluntly pointed but not beaked, glabrous, rough, with small worts, pale greyish-brown, epicarp thick, fleshy, valves of endocarp 5, bony; seeds very numerous.

Dry country; very rare. Only met with as yet on rocky ground at Nilgala, Uva; in fruit Jan. 1888. Fl. white.

Also in India and Burma.

Not having seen the flowers, some doubt as to the name of this may be felt.

25. NARGEDIA,* *Bedd.*

A large shrub, stip. acute, deciduous, fl. few, axillary; cal.-limb very short, segm. 4 (rarely 5), very short; cor.-tube short, with lines of hair within, lobes 4 (rarely 5) shorter than tube, twisted in bud; stam. inserted in cor.-tube, anth. nearly sessile, linear; ov. 2-celled with 2 ovules in each cell, stigma clavate, bilobed; fruit a dry berry, 1-celled; seeds usually 2, endosperm deeply ruminate.—Monotypic and endemic.

M. macrocarpa, *Bedd. For. Man.* cxxxiv. 2 (1873?).
Hyptianthera macrocarpa, Thw. Enum. 157. C. P. 2709.
Fl. B. Ind. iii. 122. Bedd. Fl. Sylv. t. 328.

A shrub, 8–10 ft., bark smooth, polished, yellow, young parts glabrous; l. large, $5\frac{1}{2}$–$6\frac{1}{2}$ in., oblong-lanceolate, acute at base, acuminate, acute, quite glabrous, petiole $\frac{1}{2}$ in., stip. narrowly triangular; fl. rather small, 1–3 in the axils, ped. shorter than petiole, smooth; cal.-limb glabrous, short, segm. very shallow, cor.-tube broad, lobes short, rounded, hairy in the middle; fruit $\frac{3}{4}$ in., broadly ovoid, slightly tapering at both ends; seeds 2 or 3.

Moist low country; very rare. Raitunwelle; Ambagamuwa; Singhe Raja Forest. Fl. Feb.; cream-coloured.

Endemic.

I have not seen this living.

26. SCYPHOSTACHYS, *Thw.*

Shrubs, stip. connate, fl. small, in axillary or supra-axillary bracteate spikes or clusters; cal.-limb short, segm. 4;

* An anagram of *Gardenia*.

cor.-tube short, hairy within, lobes 4, small, twisted in bud; stam. 4, anth. nearly sessile, included; ov. 2-celled, with 4 pendulous ovules in each cell, stigmas 2, pilose; fruit a berry, 1-celled, with 1 or 2 seeds.—Endemic Genus, the following the only species.

Stip. hairy within; berries purple . . . 1. S. PEDUNCULATUS.
Stip. glabrous within; berries scarlet . . . 2. S. COFFÆOIDES.

1. **S. pedunculatus,** *Thw. Enum.* 157 (1859).
C. P. 3423.
Fl. B. Ind. iii. 122.

A shrub, branches slender, cylindrical, slightly rough; l. $3\frac{1}{2}$–$5\frac{1}{2}$ in., lanceolate-oblong, abruptly narrowed at base, shortly acuminate, acute at apex, glabrous above, pubescent on midrib beneath, petiole $\frac{1}{4}$ in., stip. rather large, connate, ovate, acute, lined with long silky hair, striate outside; fl. rather small, sessile, few, in small supra-axillary, stalked spikes, peduncle $\frac{1}{2}$–$\frac{3}{4}$ in., pubescent, deflexed, bracts rather large in several opposite pairs, connate, sheathing and overlapping, pubescent, forming a short imbricated catkin; cor.-lobes short, rotundate, berry tipped with cal.-segm., nearly $\frac{3}{4}$ in., ovoid, very soft, dark purple; seed usually solitary, narrowly oblong.

Moist low country; very rare. Only found at Hewesse, Pasdun Korale. Fl. April; white.
Endemic.

2. **S. coffæoides,** *Thw. Enum.* 157 (1859). **Wal-kopi,** *S.*
C. P. 2710.
Fl. B. Ind. iii. 122. Bedd. Fl. Sylv. Anal. Gen. t. 16, f. 6; Ic. Pl. Ind. Or. t. 240.

A shrub with spreading virgate branches, bark smooth, shining, yellow; l. $3\frac{1}{2}$–5 in., lanceolate, acute at base, acuminate, acute at apex, quite glabrous, somewhat undulate at margin, subcoriaceous, petiole very short, stip. connate, acute, puberulous; fl. small, sessile in small dense axillary clusters or solitary, each surrounded at base by an involucre of 2 connate puberulous bracts; cal.-limb very short, hairy within, lobes rotundate, recurved; berry about $\frac{5}{8}$ in., oblong-ovoid, supported by persistent bracts, truncate at top, scarlet; seeds 2, oblong-ovoid.

Moist low country; rare. About Ratnapura; Badamua, S. Prov. Fl. March, April; white.
Endemic.
The native name, 'Wild Coffee,' is very appropriate as far as the foliage goes.

27. DIPLOSPORA, *DC.*

Trees, stip. triangular, persistent; fl. small, polygamo-diœcious, in sessile axillary clusters; cal.-limb very short, segm. 4; cor.-tube short, lobes 4 (rarely 5) twisted in bud; stam. 4 (rarely 5) inserted at mouth of cor., anth. exserted; ov. 2-celled, with 1–5 ovules in each cell; fruit a 2-celled berry, with few rather large seeds.—Sp. 10; all in *Fl. B. Ind.*

1. **D. Dalzellii,*** *Hk. f. Fl. B. Ind.* iii. 123 (1880). **Vella,** *T.* [PLATE L.]
Discospermum Dalzellii, Thw. Enum. 158. *D. sphærocarpa*, Bedd. For. Man. 1343. C. P. 561.
Fl. B. Ind. iii. 123.

A small pyramidal tree with numerous ascending branches, bark very smooth, white or yellowish, twigs compressed, thickened at nodes; l. 3–4 in., lanceolate or oval, acute at base, acuminate, obtuse at apex, glabrous, shining above, paler beneath, subcoriaceous, stiff, petiole $\frac{1}{4}$ in., furrowed above, stip. small, broadly triangular with a long terminal bristle, sub-persistent; fl. small, nearly sessile, in dense cymose clusters; cal. glabrous, segm. triangular, subacute; cor.-tube short and broad in fem. fl., longer and narrower in male fl., lobes nearly as long as tube, oval-oblong, recurved; berry $\frac{5}{8}$–$\frac{3}{4}$ in. or rather more, nearly globose, smooth, dark green, crowned with cal.-segm., with several seeds in each cell.

Low country, principally in the dry region; rather common. Fl. April; greenish-white.
Endemic, but very close to *D. sphærocarpa* of S. India.
When young, this is very like *Memecylon* in habit and foliage. Wood hard, heavy, fine-grained, white, smooth.

2. **D. erythrospora,** *Bedd. For. Man.* cxxxiv. 3 (1873?).
Discospermum erythrosporum, Thw. Enum. 158. C. P. 2510, 3481.
Fl. B. Ind. iii. 124.

A much-branched tree, branchlets stout, much thickened at nodes, twigs compressed, glabrous; l. $2\frac{1}{2}$–4 in., oval, acute at base, usually rounded sometimes bluntly acuminate at apex, margin usually recurved, glabrous, coriaceous, with glandular pits in axils of veins beneath, petiole very short, stip. triangular, thick, sharply acuminate, the basal portion persistent; fl. as in 1, male rather the larger; cal.-limb. almost truncate, the segm. minute, tooth-like; cor.-lobes oblong, obtuse, much longer than tube; berry less than $\frac{1}{2}$ in., ovoid or

* After N. A. Dalzell, Conservator of Forests, Bombay, and author (with A. Gibson) of 'The Bombay Flora' (1861). Died 1878.

subglobose; seeds 1–5 in each cell, oblong, bright red, immersed in purple pulp.

Lower montane zone; very rare. Ambagamuwa Dist. at about 3000 ft. (Thwaites); Haputale at about 5000 ft. Fl. Feb., Sept.; pale greenish-yellow.

Endemic.

28. SCYPHIPHORA, *Gaertn.*

A small tree, stip. short and broad, fl. small, in short axillary cymes; cal.-limb cup-shaped, persistent, segm. very small, tooth-like; cor.-tube short, lobes 4 (or 5), imbricate; stam. 4 (or 5), inserted at mouth of cor.; anth. sagittate at base; ov. long, 2-celled, with 2 ovules in each cell, one erect, the other pendulous; fruit a drupe, with 2 connate pyrenes, each with 2 seeds.—Monotypic.

S. hydrophylacea, *Gaertn. f. Fruct.* iii. 91 (1805).
Epithinia malayana, Jack, Thw. Enum. 157. C. P. 1665.
Fl. B. Ind. iii. 125. Griff. Ic. Pl. Asiat. t. 478 (repeated at t. 644 A).

Small tree or shrub, branchlets stout, somewhat thickened at nodes, sub-quadrangular, glabrous, young parts exuding a resinous secretion; l. 2–2½ in., obovate-oval, tapering to base, rounded at apex, glabrous, rather fleshy, obscurely veined, petiole ½ in., readily disarticulating, stip. short, rounded; fl. small, on very short ped., cymes small, on short peduncles, cal.-limb glabrous, almost truncate; cor.-tube hairy within, lobes shorter than tube, ovate, acute; anth. exserted; drupe small, about ⅓ in., crowned with persistent cal.-limb, obovate-ovoid, slightly compressed, with 8 (or 10?) thick, blunt, vertical ridges, glabrous, pyrenes crustaceous.

Mangrove swamps; rare. Only seen from Jaffna (Gardner). Fl. white.

Occurs also on the Carnatic coast, Malaya, Andamans, N. Australia, and New Caledonia.

Remarkably like *Lumnitzera*, with which it grows.

29. GUETTARDA, *L.*

Small tree, stip. ovate, caducous; fl. large, unisexual or polygamous, in long-stalked axillary cymes; cal.-limb tubular-cup-shaped, truncate, deciduous; cor. densely pubescent, tube long, lobes 5–9, imbricate; stam. same number as pet., inserted in cor.-tube, fil. 0; ov. 5–9-celled with a single pendulous ovule in each cell, stigma capitate; fruit a drupe, stone woody, with 5–9 sharp angles, and as many cells.—Sp. 45, all, but this one, American only.

G. speciosa, *L. Sp. Pl.* 991 (1753). **Nil-pitcha,** *S.* **Panir,** *T.*
Moon Cat. 14. Thw. Enum. 153. C. P. 2990.
Fl. B. Ind. iii. 126. Wight, Ic. t. 40. Bot. Reg. t. 1393.

A small tree, with stout pubescent branchlets, marked with l.-scars; l. rather crowded at ends of branchlets, large, 5–8 in., obovate-rotundate, somewhat cordate at base, usually rounded at apex, pubescent on both sides especially beneath, pink when young; petiole 1–1½ in., pubescent, stip. ovate, acute; fl. nearly sessile, few, crowded on the short arms of a bifid cyme, peduncle long, pubescent; cal. silky-pubescent; cor. glabrous within, lobes shorter than tube, obtuse, spreading; anth. sessile, small, included; drupe hard, depressed-globose, under 1 in., somewhat lobed, slightly pubescent.

On the coast; rare. Galle; Kalutara; and often cultivated in gardens near the sea. Fl. Nov.–Jan.; white.

Tropical shores of both worlds.

The large jasmine-like flowers are extremely sweet-scented.

30. TIMONIUS, *DC.*

Small tree or shrub, stip. triangular, caducous; fl. rather small, polygamo-diœcious, axillary, fem. often solitary, male in bifid cymes; cal.-limb small, segm. 4; cor. tubular, rather longer in male, lobes 4, valvate; stam. 4 inserted in cor.-tube, fil. 0; ov. usually 12-celled with 1 pendulous ovule in each cell, style with 4 or more branches; fruit a drupe with 10–12 compressed pyrenes.—Sp. 20; 3 in *Fl. B. Ind.*

T. Jambosella, *Thw. Enum.* 153 (1859). **Peddimella, Angana,** *S.*
Nelitris Jambosella, Gaertn. Fruct. i. 134. *Eupyrena glabra,* W. & A. Prod. 423. C. P. 157.
Fl. B. Ind. iii. 127. Bedd. Ic. Pl. Ind. or t. 190.

A small tree-like shrub, 8–10 ft., branchlets slender, cylindrical, glabrous, marked with leaf-scars; l. 2–5 in., rather closely placed, oval or lanceolate, acute at both ends, glabrous but often pubescent on veins beneath, and with tufts of hair in their axils, venation pellucid, margin sometimes recurved, petiole $\frac{1}{8}$–$\frac{3}{4}$ in., stip. triangular, acuminate; fl. sessile, with 2 very small bractlets beneath, male on short spreading branches of cyme, fem. solitary or three together, peduncle about 1 in., cal. silky; cor. pubescent outside, smooth within, fleshy, lobes shorter than tube, recurved; anth. sessile, linear, included; drupe $\frac{1}{3}$–$\frac{1}{2}$ in., nearly globose, lobed or ribbed over pyrenes, smooth, dark green, tipped with cal.-segm.

Moist region, rarely in the low country, principally in the lower montane zone, but extending up to 6000 ft.; common. Fl. March, April, September; yellow.

Also in the Andamans, Malaya, and Mauritius, but not in Peninsular India.

The genus *Timonius* dates only from 1830, and should rightly be superseded by *Nelitris* (1788); for Gaertner's figure of the fruit (t. 27, f. 5) shows that this was the plant intended. He has in the text, however, confused it with some *Eugenia*, the specimens having been named 'Wal-jambu.' The name thus became applied by Decandolle to a genus of Myrtaceæ (properly *Decaspermum*, Forst.).

31. **DICHILANTHE,** *Thw.*

A tree, stip. connate into a ring, persistent; fl. large, in terminal heads; cal.-limb tubular, curved, with 5 hairy scales at the mouth, segm. 5, longer than tube, slightly unequal; cor. *irregular*, curved, tubular below, funnel-shaped above, 2-lipped, upper lip 2-toothed, lower lip 3-toothed; stam. 5, inserted near mouth of cor., disk large, annular, fleshy; ov. 2-celled with 1 pendulous ovule in each cell, style very long, stigma clavate, bilobed; "fruit obovoid, gibbous, 2-celled, pericarp thick."—There is a second species in Borneo.

This genus with its irregular cor. might well stand in *Caprifoliaceæ*, where Thw. and Beddome, and at one time J. D. Hooker, placed it.

D. zeylanica, *Thw. in Kew Journ. Bot.* viii. 270 (1856).
Thw. Enum. 136. C. P. 3422.
Fl. B. Ind. iii. 128. Kew Journ. Bot. viii. t. 8, f. A. Bedd. Fl. Sylv. Anal. Gen. t. 15, f. 4.

A tree, usually small, branchlets stout, swollen at nodes, bark smooth, grey; l. 4–6 in., lanceolate, acute at base, shortly acuminate at apex, quite glabrous, coriaceous (with fine raised reticulation when dry), petiole very short, stout, stip. short, truncate; fl. sessile, about 6–8 together in a very shortly stalked terminal head and the cal.-tubes glued together with resinous exudation; cal.-segm. linear-lanceolate, acuminate, spreading; cor. $1\frac{1}{4}$–$1\frac{1}{2}$ in., strongly curved downwards, silky outside, lips short; fil. short, anth. small, oblong; style much exserted; fruit not seen.

Moist low country; very rare. On the summits of Hiniduma Kande and Nillowe Kande; Bambarabotuwa, Sabaragamuwa. Fl. March–June; scarlet.

Endemic.

A very remarkable and anomalous plant; the persistent ring-like stip. become coated with resin, and form nodosities on the branches.

32. KNOXIA,* *Linn.*

Annual or perennial herbs or undershrubs, stip. with rigid bristle-like teeth; fl. sessile or nearly so, small, dimorphic, numerous, in terminal cymes or spikes; cal.-segm. 4, one often greatly enlarged; cor.-tube hairy at mouth, lobes 4, short, valvate; stam. 4; ov. 2-celled, with 1 pendulous ovule in each cell, stigmas 2; fruit very small, dry, of 2 indehiscent carp. separating from a central persistent columella and usually also from one another.—Sp. 8; all in *Fl. B. Ind.*

Cal.-segm. nearly equal.
  L. sessile, linear-lanceolate . . . . . . 1. K. CORYMBOSA.
  L. stalked, oval . . . . 2. K. MOLLIS.
One cal.-segm. greatly enlarged.
  Fl. in long spikes; fruit not compressed . . 3. K. ZEYLANICA.
  Fl. in capitate cymes; fruit compressed . . 4. K. PLATYCARPA.

The fruit is remarkably like that of an Umbellifer.

1. **K. corymbosa,** *Willd. Sp. Pl.* i. 582 (1797).
Moon Cat. 10. *K. stricta*, Thw. Enum. 152 (? Gaertn.). C. P. 3620.
Fl. B. Ind. iii. 128. Wight, Ill. t. 128.

An erect annual, 2–4 ft. high, almost unbranched, stem rather stout, with elongated internodes, densely and softly hairy; l. few, distant, 3–4½ in., sessile or very nearly, linear-lanceolate or linear, much attenuate at both ends, acute, usually hairy on both sides, lat. veins very oblique, stip. with 3–5 filiform hairy bristles; fl. very small, numerous, on sides of slender branches of large lax corymbose cymes; cal.-segm. minute, triangular, none enlarged; cor.-lobes obtuse; fruit $\frac{1}{16}$ in., oblong-ovoid, scarcely compressed, splitting from the base into two carp., carp. plano-convex, glabrous, not ribbed on back.

Low country and up to 4000 ft.; rather common. Bintenne; Ugalduva Valley; Ramboda. Moon's locality is Walapane. Fl. Feb.; violet.
Also in India, Malay Islands, and Trop. Australia.
The mericarps readily separate from the columella when ripe with the slightest pressure.

2. **K. mollis,** *W. & A. Prod.* 439 (1834).
K. corymbosa, Thw. Enum. 151 (non Willd.). C. P. 3619.
Fl. B. Ind. iii. 129.

Annual, 2–4 ft., branched, stem erect, pilose or nearly glabrous; l. 2½–4½ in., oval or ovate-oval, tapering at both ends, acute, slightly hairy on both sides, petiole ¼–1 in., stip.

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* Commemorates Robert Knox, who was in captivity among the Kandians from 1659–79, and wrote an 'Historical Relation of Ceylon,' published in 1681, giving an account of his experiences and escape.

as in the last; fl. in lax corymbose cymes; cal.-segm. triangular, acute, nearly equal or one sometimes slightly larger; cor.-tube tubular-funnel-shaped; fruit about $\frac{1}{8}$ in., broadly ovoid, compressed, readily separable from the columella but without splitting into separate carp., smooth, black.

Montane zone to 6000 ft.; rare. Uva (Thwaites); Maskeliya; Hakgala. Fl. May, June, Sept.; white.

Also in mountains of S. India.

Fl. B. Ind. refers to this with doubt *K. stricta*, Gaertn. (Fruct. i. 122, t. 25, f. 8). Gaertner's specimens were collected in Ceylon by Kœnig, but could scarcely be this montane species.

Ceylon specimens are often nearly glabrous.

3. **K. zeylanica,** *L. Sp. Pl.* 105 (1753).
Herm. Mus. 11. Burm. Thes. 144. Fl. Zeyl. n. 400. Moon Cat. 10. Thw. Enum. 152. W. and A. Prod. 440. C. P. 1690.
Fl. B. Ind. iii. 130. Burm. Fl. Ind. t. 13, f. 2.

A small undershrub, 1–2 ft., with a large, stout tap-root and ascending usually much-branched stems, branches erect, cylindrical, stiff, nearly glabrous, shining, purple; l. numerous, 1–2 in., broadly or narrowly ovate-oblong, nearly sessile, acute at both ends, glabrous, finely ciliate on margin, stip. adnate to base of leaf, short, with 3 or 5 filiform teeth bristly at end; fl. in terminal spikes which become greatly elongated with fruit; cal.-segm. acute, the outermost one enlarged into a stiff horn twice as long as ov., persistent; cor.-tube $\frac{3}{8}$ in., very slender, very woolly at mouth, lobes $\frac{1}{4}$ as long as tube, broadly oval; fruit about $\frac{1}{10}$ in., ovoid-globular, crowned with cal.-segm. (the large one as long as fr.), glabrous, pale brown, carp. readily separating, plano-convex, not compressed, rounded and keeled down the back.

Open ground in the moist low country; very common. Fl. Feb.; white or pinkish.

Endemic.

Hermann gives 'Wissaduli' as the native name for this, but no doubt incorrectly (see footnote, Part I. p. 146, under *Wissadula zeylanica*). Moon has 'Ela-ratmul,' but I do not find this generally used.

4. **K. platycarpa,** *Arn. Pug.* 26 (1836). [Plate LI.]
Thw. Enum. 152. C. P. 1689.
Fl. B. Ind. iii. 131.

A dichotomously branched, small shrub, 1–3 ft., branches erect, cylindrical, glabrous, twigs with two lines of pubescence; l. sessile, erect, 1–2$\frac{1}{2}$ in., narrowly oblong-lanceolate or linear, subacute, glabrous, sometimes ciliate on margin, rather thick, stip. of 3 or 5, rigid, often hairy bristles, the middle one the

longest; fl. crowded in small heads terminating the branches of trifid terminal cymes, no bracts; cal. glabrous, segm. very small, linear-lanceolate, acute, one much enlarged, apiculate; cor. glabrous outside, tube $\frac{3}{8}$ in., slender, lobes half as long, oblong-lanceolate, subacute, thick; fruit $\frac{1}{8}$–$\frac{1}{6}$ in., broadly ovoid, crowned with cal.-segm., glabrous, carp. readily separating, compressed, plano-convex, with a dorsal rib, dark brown.

Var. β, **hirsuta,** *Thw. l. c.* *K. hirsuta*, Arn. Pug. 26. C. P. 1688.

Whole plant (except upper surface of l.), including cor. outside, more or less hairy; fl. rather larger.

Var. γ, **foliosa,** *Thw. Enum. l. c.* C. P. 51.

Hairy; l. broader, oval, stip. with longer bristles; bracts foliaceous; cal.-segm. much longer; cor. hairy outside.

Var. δ, **spicata,** *Thw. in Trim. Syst. Cat.* 44. C. P. 3996.

L. quite glabrous; cymes lengthening out into spikes; fruit distant on the spikes, larger, more elongated, hairy.

Montane zone in the patanas; very common. Var. γ a sylvan variety. Var. δ rare. On False Pedro Mountain. Fl. all the year; pale violet-pink or nearly white.

Endemic.

An extremely variable plant. The type, and, still more, var. δ, approach *K. zeylanica*. The dimorphism of the flowers (long-styled and short-styled) is striking—in one the style, and the other the stam., being exserted.

33. **CANTHIUM,*** *Lam.*

Trees or shrubs, with or without woody spines, stip. broadly triangular, acute, fl. small, in axillary cymes or fascicles; cal.-limb very short, segm. 4 or 5, usually tooth-like, acute; cor.-tube campanulate or globose, with a ring of deflexed hair within, lobes 4 or 5, valvate, reflexed; stam. inserted at mouth of cor.; ov. 2-celled with 1 pendulous ovule in each cell, stigma large, capitate, fruit a drupe, more or less didymous, with 2 hard pyrenes.—Sp. 70; 17 in *Fl. B. Ind.*

Branches without spines (also sometimes in 7).
- L. lanceolate, over 3 in. . . . . . . 1. C. DIDYMUM.
- L. rotundate, under 3 in. . . . . . 2. C. MONTANUM.

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* From 'Canti,' the Malabar name for *C. Rheedii*, as given in Hort. Malab.

Branches with spines.
Fl. usually 5-merous.
Cor.-tube not globose.
L. under 1 in., acute at base . . . 3. C. PUBERULUM.
L. over 1 in., rounded at base.
Fruit under $\frac{1}{2}$ in. . . . . . . 4. C. RHEEDII.
Fruit 1 in. . . . . 5. C. MACROCARPUM.
Cor.-tube nearly globose . . . . 6. C. CAMPANULATUM.
Fl. always 4-merous, very small . . . 7. C. PARVIFLORUM.

1. **C. didymum,** *Gaertn. f. Fruct.* iii. 94 (1805). **Pana-karawu Gal-karanda, Pandaru,** *S.* **Vatchikuran, Yerkoli,** *T.*

Psydrax dicoccos, Gaertn. Fruct. i. 125. Thw. Enum. 152. C. P. 3419, 2607, 1667, 3511.

Fl. B. Ind. iii. 132. Wight, Ic. t. 1034 (*C. umbellatum*). Bedd. Fl. Sylv. t. 221. Gaertn. Fruct. i. t. 26, f. 2, and iii. t. 196, f. 5 (fruit only).

A moderate-sized tree, bark smooth or vertically furrowed, whitish, branchlets numerous, drooping, thickened at nodes, glabrous, somewhat compressed, without spines; l. $3\frac{1}{2}$–$4\frac{1}{2}$ in., lanceolate, acute at base, acuminate, obtuse, very glabrous, bright green above, paler beneath, subcoriaceous, rather undulate, lat. veins few, very oblique, pellucid, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stip. triangular, acute, usually caducous; fl. small, on rather long ped., numerous, cymes lax, pedunculate, corymbose, bracts minute or none; cal. truncate or with 5 teeth, glabrous or pubescent; cor. campanulate, lobes 5, shorter than tube, lanceolate, acute; drupe $\frac{1}{4}$–$\frac{1}{2}$ in., nearly globose, somewhat didymous when dry, purple, pyrenes kidney-shaped, very much warted, black.

Var. β, **lanceolatum,** *Thw. Enum. l. c.* *Webera lanceolata*, Moon Cat. 19. *C. lanceolatum*, Arn. Pug. 24. C. P. 2513.

L. narrowly oblong, stip. acuminate; fruit smaller.

Low country and up to 4000 ft.; common. Var. β, Kalutara (Moon); Kandy; Hunasgiriya. Fl. April; white.

Also in India, Malaya, and S. China.

A variable plant. C. P. 3419 is var. *grandifolium*, Thw. (from Carawita Kande), and C. P. 2607 (from Ratnapura) is var. *rostratum*, Thw.; but neither seem worth separate names. Gaertner's *Psydrax* is described and figured from Ceylon specimens (in the Leyden Museum) collected by Hermann, but the plant does not seem to be noticed by other authors on Hermann's collections. Another genus of Gaertner's, *Caranda pedunculata*, is based on this species. This is described in Fruct. ii. 17, and figured at t. 83. The supposed fruit is a large, hard, beaked leaf-gall, very frequently found, sometimes clustered, on the young branches of this tree. They are called 'fruits' even in Fl. B. Ind.

The wood is very hard, fine-grained, greyish, heavy, and has been called 'Ceylon Box-wood.' The native names of this tree are not well ascertained. Moon gives 'Gal-séru' for var. *lanceolatum*.

2. **C. montanum,** *Thw. Enum.* 152 (1859).

C. P. 2610, 2653.

Fl. B. Ind. iii. 132.

A large or moderate-sized tree, bark thin, blackish, flaking off in small pieces, branchlets numerous, stout, thickened at nodes, without spines, twigs quadrangular-compressed, glabrous; l. $1\frac{1}{2}$–$2\frac{1}{2}$ in., rotundate, rounded at both ends, more or less revolute at margin, very stiff and coriaceous, quite glabrous, veins few, reticulate, prominent beneath, petiole extremely short and stout, stip. short, broad, with a stout mucronate apex; fl. on long ped., cymes umbellate on stout peduncles; cal.-segm. short, broad, apiculate, cor.-lobes 5, as long as tube, acute, reflexed; stam. exserted; drupe $\frac{3}{8}$ in., ovoid, very slightly didymous.

Var. β, **minus,** *Thw. l. c.* C. P. 1685.

L. smaller, somewhat oval; fl. a little larger, ped. strongly reflexed after flowering.

Forests of the montane zone from 4000–7000 ft.; rather common. Fl. Dec. to April; green.

Endemic.

The wood is very hard, heavy, and fine-grained, and, like others in the hills, is called, incorrectly, 'Wal-burutu' by the up-country sawyers. It has been used for railway sleepers.

3. **C. puberulum,** *Thw. in Fl. B. Ind.* iii. 134 (1880).
C. P. 3995.

A shrub, with virgate branches armed with sharp, supra-axillary spreading spines, pubescent when young, and with numerous short, suppressed branchlets; l. small, $\frac{1}{2}$–1 in., fasciculate on the suppressed branchlets, oval or oblong-oval, acute at both ends, slightly pubescent above, more so beneath, petiole short, slender, stip. small, hairy, with a filiform apex; fl. very small, on rather long pubescent ped. with 2 bractlets near the base, 1–3 on very short peduncles; cal. hairy, segm. long, linear-lanceolate, very acute, recurved; cor.-tube shorter than cal., pubescent, lobes acute, recurved; fruit not seen.

'Central Province' (Fl. B. Ind.). There is no locality attached to the specimens in the Peradeniya Herbarium, which were collected in 1869. I have seen no others.

4. **C. Rheedii,** *DC. Prod.* iv. 474 (1830).
Thw. Enum. 153. W. and A. Prod. 426. C. P. 1666.
Fl. B. Ind. iii. 134. Rheede, Hort. Malab. v. t. 37.

A small, much-branched bush, branchlets divaricate, roughly pubescent, usually armed with straight or slightly curved, sharp, supra-axillary spines $\frac{1}{4}$–$\frac{1}{2}$ in. long; l. 1–2 in., ovate, cordate or rounded at base, acuminate, obtuse or subacute at apex, glabrous, or with a few bristly hairs beneath on veins; thin, lat. veins rather prominent beneath, with glands in the axils; fl. small, solitary or few in small sessile cymes; cal.-limb

spreading with 5 distant teeth, cor.-tube short and wide, the rings of hair within stiff and bristly, lobes 5, ovate, acute; anth. small, exserted; stigma bilobed; drupe broader than long, about $\frac{3}{8}$ in. wide, didymous, compressed, bilobed at top, pyrenes strongly worted.

Var. β, **minus,** *Thw. l. c.* C. P. 3420.

L. smaller, $\frac{1}{2}$–1 in., spines very slender, straight; cor.-lobes long, attenuate.

Moist low country up to 3000 ft.; rather common. Kalutara (Moon); Galle; Hunasgiriya. Wight (l. c.) records specimens from Rottler's Herb. collected at Colombo April, 1806. Var. β, Singhe Raja Forest. Fl. Nov.-Feb.; pale greenish-yellow.
Also in S. India.

5. **C. macrocarpum,** *Thw. Enum.* 152 (1859).
Plectronia macrocarpa, Bedd. Ic. Pl. Ind. Or. 57. C. P. 2816.
Fl. B. Ind. iii. 135. Bedd. Ic. Pl. Ind. Or. t. 238.

A half-climbing shrub, branchlets long, cylindrical, rufous, at first pubescent, afterwards glabrous, spines supra-axillary, stout, compressed, either straight and $\frac{1}{2}$–$\frac{3}{4}$ in., or shorter and strongly hooked, very sharp; l. 2–2$\frac{1}{2}$ in., oval or lanceolate, rounded at base, very acuminate, acute, rough on both sides with minute, scattered, rufous, prickly hairs, petiole $\frac{1}{2}$ in., rufous-pubescent, stip. broad, hairy, with a long filiform point; fl. rather small, on short ped., cymes small, pedunculate, pubescent; cor.-tube campanulate, lobes 4 or 5, oblong, acute, longer than tube; stam. and style exserted, stigma very large, cubical; drupe 1 in. wide, broader than long, 2-lobed at top, compressed, didymous but with one lobe often suppressed; pyrenes rugose.

Very rare, and only found on the Hantane Range at about 3000 ft. Fl. Feb.; pale greenish-white.
Endemic. First collected by Champion.

6. **C. campanulatum,** *Thw. Enum.* 153 (1859).
C. P. 2472.
Fl. B. Ind. iii. 135.

A small semi-scandent shrub, with many very slender branches, adpressed-hairy when young, spines $\frac{3}{4}$ in., supra-axillary, numerous, slender, quite straight, very sharp; l. often fasciculate on suppressed branchlets, small, $\frac{3}{4}$–1$\frac{1}{2}$ in., ovate or oval, acute or rounded or rather cordate at base, obtuse but apiculate at apex, glabrous, petiole very short, stip. sharply pointed; fl. usually solitary, or 2 or 3 together, ped. very slender, glabrous, jointed near the base, buds much pointed; cal.-limb saucer-shaped, segm. very acute; cor. thick, tube

inflated, nearly globose, lobes 5, rather longer than tube, lanceolate, with long acuminate points, reflexed; fl. very short; style rather exserted, stigma very large, truncate; drupe $\frac{3}{8}$ in. wide, didymous, compressed, tapering to base.

Low country to 3000 ft.; rare. Deltota; Haragama; Madulsima (Marshall Ward). Fl. Aug.; cream-coloured.

Endemic.

This is the only plant besides species of *Coffea* upon which the destructive parasitic fungus, *Hemileia vastatrix*, was detected by Marshall Ward in Ceylon.

7. **C. parviflorum,** *Lam. Encycl. Meth.* i. 602 (1783). **Kara,** *S.* **Karai,** *T.*

Moon Cat. 10. Thw. Enum. 152. C. P. 1662.

Fl. B. Ind. iii. 136. Rheede, Hort. Malab. v. t. 36. Roxb. Cor. Pl. t. 51.

A much-branched shrub or small tree, branches usually stout and rigid, with the supra-axillary spines numerous, thick, woody, over 1 in. long, divaricate, often 3 in a whorl, but sometimes the branches are less rigid and quite without spines; l. often fascicled, variable, $\frac{3}{4}$–$2\frac{1}{4}$ in., rotundate or oval or oblong-oval, obtuse, glabrous, whitish beneath with conspicuous reticulate venation, petiole short, stip. short, with a long point; fl. very small, on long slender ped., cymes many-flowered, sessile or pedunculate; cal.-segm. 4, acute; cor.-tube inflated, globose, lobes 4, as long as tube, ovate, acute; drupe $\frac{3}{8}$ in., ovoid, compressed, slightly didymous.

Low country, especially in dry region; common: and up to 4000 ft., rarer. Fl. Nov.–March; yellowish.

Also in S. India.

The form in the moist region, especially at upper elevations, is much less rigid and often without spines, and has larger leaves, looking quite a different plant.

The leaves are used in curries in Northern Prov. Wood very hard and close-grained.

34. **IXORA,*** *Linn.*

Shrubs or small trees, stip. cuspidate, more or less persistent, fl. numerous, in terminal corymbose or paniculate cymes; cal.-limb undeveloped, segm. 4, small; cor. with very long slender tube, lobes 4, twisted in bud; stam. 4, inserted at mouth of cor., fil. very short, anth. small, linear; ov. 2-celled, with a single ovule in each cell attached to septum,

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* Taken by Linnæus from Rheede, who states that Baldæus in his account of Ceylon says that the flowers (of *I. coccinea*) are offered in sacrifices to 'the god Ixora' (= ? Isvara).

style exserted, stigmas 2; fruit globose or sub-didymous, with 2 plano-convex pyrenes.—Sp. 100; 37 in *Fl. B. Ind.*

Cal.-segm. as long as or longer than ov.
  L. under 3 in., cal.-segm. twice as long as ov. . 1. I. CALYCINA.
  L. over 3 in., cal.-segm. as long as ov. . . . 2. I. THWAITESII.
Cal.-segm. shorter than ov.
  Cor.-tube under ½ in. . . . . 3. I. PARVIFLORA.
  Cor.-tube over 1 in.
    L. over 4 in., acute at base . . . . . 4. I. JUCUNDA,
    L. under 4 in., rounded at base . . . . 5. I. COCCINEA.

1. **I. calycina,** *Thw. Enum.* 155 (1859).
C. P. 448.
Fl. B. Ind. iii. 138. Bedd. Ic. Pl. Ind. Or. t. 97.

A bush or small tree, much branched, branchlets nodulose with closely placed and very prominent l.-scars, young parts glabrous; l. 1½–3 in., oval or oblong-oval, slightly cordate or rounded or acute at base, acute, margin often recurved, glabrous, rather glaucous beneath, rigid, petiole extremely short, stip. short with an almost spinous point, persistent; fl. nearly sessile, cymes rather small, trichotomous, glabrous, bracts linear; cal.-segm. more than twice as long as ov., linear-lanceolate, acute, glabrous; cor.-tube ¾ in., very slender, lobes short, broad, ovate, acute, recurved; fruit ½ in., broadly ovoid, crowned with long cal.-segm., purple.

Montane zone 4000–7000 ft.; rather common. Fl. Feb., March, and September; pale pink.
Endemic.

2. **I. Thwaitesii,** *Hk. f. in Fl. B. Ind.* iii. 138 (1880).
I. acuminata, Thw. Enum. 155 (non Roxb.). C. P. 748.
Fl. B. Ind. iii. 138. Bot. Mag. t. 5197 (*I. jucunda*).

A small slender tree, bark thick, exfoliating in oval pieces, branchlets compressed; l. rather large, 4½–7 in., lanceolate or linear-oblong, rounded or acute or tapering at base, shortly acuminate, acute, lat. veins rather prominent, petiole very short, stip. with a long cuspidate point, persistent; fl. rather large, nearly sessile, crowded, cymes large, very corymbose and flat-topped; cal.-segm. about as long as ov., narrowly lanceolate, acute; cor.-tube 1–1¼ in., lobes ⅓–½ in., spreading; fruit ⅜ in., nearly globose, somewhat didymous, red.

Var. β, **velutina.**

Twigs and l. on both sides densely and finely velvety.

Low country in both moist and dry regions; rather common. Var. β at Uma-oya. Fl. Jan.–May; cream-coloured.
Endemic.

Wood very hard and closed-grained, pale brownish-yellow. The flowers vary much in size. The figure in the Botanical Magazine is very good for this species, but is unfortunately named *I. jucunda.*

3. **I. parviflora,** *Vahl, Symb. Bot.* iii. 11 (1794). **Maharatambala,** *S.* **Karankutti, Painkuray,** *T.*
Moon Cat. 10. Thw. Enum. 155. C. P. 2575.
Fl. B. Ind. iii. 143. Wight, Ic. t. 711. Bedd. Fl. Sylv. t. 222.

A small, much-branched tree, bark thick, reddish-brown, exfoliating in irregular pieces, branchlets somewhat compressed, glabrous; l. 3–5 in., oval-oblong or somewhat obovate, rounded at base, suddenly and shortly acuminate, acute, glabrous, coriaceous, dark green and shining above, paler beneath, venation pellucid, petiole very short, stout, stip. short, cuspidate, subpersistent; fl. very small and numerous, on short ped., cymes trichotomous, stalked, laxly arranged in lax terminal inflor.; cal.-segm. very shallow, tooth-like; cor.-tube $\frac{1}{6}$–$\frac{1}{4}$ in., very slender, lobes less than half as long as tube, oblong, reflexed; fruit small, $\frac{1}{4}$ in., globose.

Var. β, **zeylanica,** *Hk. f. in Fl. B. Ind. l. c. I. jucunda*, var. γ, Thw. Enum. 155. C. P. 2.

L. larger, 4–7 in., broader, more acuminate, acute at base, thinner; branches of inflor. longer; fl. rather larger; fruit $\frac{3}{8}$ in.

Low country, especially in the dry region; common. Var. β in lower montane zone, Adam's Peak; Medamahanuwara; Hunasgiria. Fl. April–July; white, var. β, pinkish, very sweet-scented.

Also in India and Burma; var. β, endemic.

Wood very hard and heavy, fine-grained, brownish-yellow.

4. **I. jucunda,** *Thw. Enum.* 155 (1859) (excl. var. γ). [PLATE LII.]
C. P. 702, 3424.
Fl. B. Ind. iii. 144.

A small tree, 10–12 ft., branchlets stout, thickened at the nodes; l. large, 4–6 in., oval or lanceolate, acute at both ends, glabrous, rather coriaceous, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stip. acuminate; fl. on rather long ped., numerous, cymes large, rather lax, trichotomous; cal.-segm. oval, obtuse, shorter than ov.; cor.-tube $1\frac{1}{4}$ in., lobes oblong-oval, less than $\frac{1}{4}$ length of tube; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., nearly globose.

In forests, moist region up to 4000 ft.; rather common. Fl. most of the year; white or pink, sweet-scented.

Endemic.

A very beautiful shrub. C. P. 3424 is var. β of Thwaites, which differs in having narrower, often linear-lanceolate, leaves, cor. with smaller, shorter, strongly reflexed lobes and acute cal.-segm., but seems to be connected with type by intermediates. The cal. and whole inflorescence are often bright coral-red.

5. **I. coccinea,** *L. Sp. Pl.* 110 (1753). **Ratambala,** *S.* **Vedchi,** *T.*
Herm. Mus. 15, 36. Burm. Thes. 125. Fl. Zeyl. n. 54 and 55. *I. alba,* L. Sp. Pl. 110. Moon Cat. 10. Thw. Enum. 154. C. P. 190.
Fl. B. Ind. iii. 145. Burm. Thes. t. 57. Wight, Ic. t. 153. Bot. Mag. t. 154 (*I. grandiflora*).

A shrub with long branches, twigs compressed, thickened at the nodes; l. small, 2–3 in., obovate or oval-oblong, rounded or even subcordate at base, acute, often cuspidate at apex, glabrous and shining, rather rigid, lat. veins somewhat conspicuous, pellucid, petiole extremely short, stout, stip. with a long, rigid bristle, subpersistent; fl. rather large, shortly stalked, cymes lax, trichotomous; cal.-segm. either short with toothed margin, or longer and acute, shorter than ov.; cor.-tube 1–1½ in., very slender, lobes oblong-oval, acute or obtuse, about ⅓ as long as tube, spreading; fruit ½ in., nearly globose, purple.

In the low country; very common everywhere up to 2000 ft. Fl. all the year; brilliant scarlet.

Also in India and Burma.

One of our commonest and most conspicuous shrubs. The flowers vary much in size, and are occasionally found pure lemon-yellow, also sometimes pale cream-coloured with a tinge of red. The latter form has been found about Galle and Kalutara, and is probably *I. alba*, L., and Fl. Zeyl. n. 55.

The leaves and bark are used as a remedy for diarrhœa, and the former also externally to ulcers, &c. Wood very hard and heavy, but of no size.

35. **PAVETTA,*** *Linn.*

Large shrubs, stip. often connate, deciduous or persistent, fl. numerous, in terminal or axillary cymes; cal.-segm. 4, short or long; cor. with a usually long tube, lobes 4, twisted in bud; style very long, at least twice as long as cor.-tube, very much exserted, stigma entire; otherwise as in *Ixora*.—Sp. 60; 10 in *Fl. B. Ind.*

Cymes corymbose, stalked.
  Cal.-segm. shorter than ov.
    L. lanceolate or obovate.
      L. glabrous; cor.-tube ½ in. . . . . 1. P. INDICA.
      L. pubescent beneath; cor.-tube over ½ in. . 2. P. HISPIDULA.
    L. linear or nearly, glabrous; cor.-tube over ½ in. . . . . 3. P. ANGUSTIFOLIA.
  Cal.-segm. twice as long as ov. . . . . . 4. P. GLENIEI.
Cymes capitulate, sessile . . . . . . 5. P. INVOLUCRATA.

The first 3 species are very closely allied.

1. **P. indica,** *L. Sp. Pl.* 110 (1753). **Pawatta,** *S.* **Pavaddai,** *T.* Herm. Mus. 3. Burm. Thes. 209. Fl. Zeyl. n. 56. Moon Cat. 10. Thw Enum. 155. C. P. 1663, 2611, 2546, 3616.

Fl. B. Ind. iii. 150. Wight, Ic. t. 148.

A bush or small tree with numerous spreading branches, bark smooth, yellowish-white, twigs cylindrical, glabrous; l.

* The Sinhalese name scarcely altered.

3–6 in.; lanceolate, tapering to base, acuminate, subacute, glabrous on both sides, dark green and shining above, with scattered large, thickened, hard warts, more prominent above than beneath, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stip. connate, triangular, acute, thin, deciduous; fl. very numerous, on ped. longer than cal., cymes copious, lax, corymbose, terminal, glabrous, often with bracts below the branches; cal.-segm. very small, tooth-like; cor.-tube about $\frac{1}{2}$ in., lobes oblong, obtuse, about half length of tube; style exserted for fully $\frac{3}{4}$ in., very slender, stigma slightly clavate; fruit $\frac{1}{4}$–$\frac{5}{8}$ diam., nearly globose, black, polished.

Var. β, **montana,** *Thw. in Fl. B. Ind.* l. c. C. P. 2512.

L. narrower, obtuse; fl. larger; cor.-tube $\frac{1}{4}$ in. long.

Low country; common. Var. β extending in the hills to 4000 ft., or higher. Fl. Dec.–May; white. Var. β, greenish.

Also in India, Burma, Malaya, S. China, N. Australia.

This common shrub is very variable in the foliage; C. P. 3616 is a pubescent form from Batticaloa, and C. P. 2611 a very narrow-leaved form with a few larger flowers on very slender long ped.

2. **P. hispidula,** *W. & A. Prod.* 431 (1834).
Thw. Enum. 156. C. P. 742, 3924 (?).
Fl. B. Ind. iii. 151 (excl. var. 4).

A large bush, branchlets somewhat compressed, usually pubescent; l. large, 4–7 in., variable, usually obovate-oval, acute at both ends, shortly acuminate, usually glabrous above but more or less pubescent beneath, petiole short, stip. rounded, often pubescent; fl. large, numerous on short ped., cymes very large, corymbose, terminal, more or less pubescent; cal. pubescent, segm. narrowly triangular, acute, shorter than ov.; cor.-tube from $\frac{3}{4}$–1 in. or more long, slightly widened upwards, lobes oblong, obtuse, apiculate, less than half length of tube; style exserted for $1\frac{1}{2}$–2 in., gradually tapering, stigma scarcely at all fusiform; fruit $\frac{3}{8}$–$\frac{1}{2}$ in., broader than long, somewhat didymous, metallic grey-purple, shining.

Moist region up to 4000 ft.; rather rare. Kukul Korale; Hantane; Pusselawe; Hunasgiria. Fl. June; greenish-white.

Also in S. India.

A variable species. C. P. 3924 was thought by Thwaites to be a natural hybrid between this and *P. indica*. The Fl. B. Ind. distinguishes as var. *zeylanica* a larger-flowered form, equally common with the smaller-flowered one.

3. **P. angustifolia,** *Thw. Enum.* 156 (1859).
C. P. 267.
Fl. B. Ind. iii. 151 (*P. hispidula*, var. 4). Bedd. Ic. Fl. Ind. Or. t. 99.

A shrub, with smooth, white bark, branches cylindrical, often nodular with thickened, closely placed nodes, twigs

compressed, glabrous; l. rather crowded, 4–7 in., linear or lanceolate-linear, much tapering to either end, subacute, often somewhat undulate, glabrous, deep green and polished above, paler beneath, with similar warts to *P. indica*, stip. connate into a tube, with a terminal bristle, usually splitting down one side, subpersistent, fl. on short ped., cymes corymbose, rather lax, axillary or terminal; cal. glabrous, segm. distant, linear-lanceolate, acute, rather shorter than ov.; cor.-tube $\frac{5}{8}$–$\frac{7}{8}$ in., lobes linear-oblong, obtuse, more than half as long as tube; anth. very long, linear; style rather stout, tapering to very slightly fusiform stigma, exserted for $1\frac{1}{2}$–2 in.; fruit $\frac{1}{3}$ in., capped with cal.-limb, sub-didymous, broader than long, greenish-purple.

Moist low country by rivers, rather rare. About Ratnapura; by the Gindura near Wattagalle. Fl. March, April; cream-coloured or pale lemon-yellow.

Endemic.

Considered a variety of *P. hispidula* in Fl. B. Ind.

4. **P. Gleniei,** *Thw. in Fl. B. Ind.* iii. 152 (1880). **Vetpavaddai,** *T.*

P. tomentosa, Thw. Enum. 156 (non Sm.). C. P. 2815.

Fl. B. Ind. iii. 152.

A large shrub, bark pale cinnamon-brown, smooth, twigs compressed, pubescent; l. 2–4 in., oblong-oval or oblong-lanceolate, acute at base and apex, pubescent on both sides, densely so beneath, with scattered warts, venation pellucid, petiole about $\frac{1}{2}$ in., stip. slightly connate, triangular, acute; fl. small, in lax, trichotomous, hairy, axillary cymes shorter than l.; cal.-segm. linear, fully twice as long as ov., hairy, persistent; cor.-tube about $\frac{1}{2}$ in., lobes narrowly oblong, obtuse, more than half as long as tube; style exserted for about $\frac{1}{2}$ in., stigma slightly clavate, pubescent; fruit small, $\frac{1}{4}$ in., nearly globose, crowned with long erect cal.-segm., hairy.

Dry region; common. Puttalam; Trincomalie; Batticaloa; N. Prov.; Anuradhapura; Dambulla; Doluwa Kande, near Kurunegala. Fl. Nov.-March; white.

Endemic.

This common dry-country plant is very constant. I have not found the glabrous form recorded in Fl. B. Ind.

5. **P. involucrata,** *Thw. Enum.* 156 (1859).

C. P. 428.

Fl. B. Ind. iii. 152. Bedd. Ic. Pl. Ind. Or. t. 100, and Fl. Sylv. Anal. t. 29.

A shrub, 10–12 ft. high, branchlets thickened at nodes with prominent l.-scars, twigs much compressed, glabrous; l. 3–$4\frac{1}{2}$

in., often crowded, obovate-oval, tapering to base, subacute, shortly acuminate, glabrous on both sides, with scattered warts, petiole $\frac{1}{4}$ in., stip. large, connate, acuminate, tube splitting down one side, deciduous; fl. sessile, crowded in dense, sessile heads at ends of short axillary branches, usually bearing a single pair of l. immediately beneath the head, bracts very large, ovate, membranous, forming an involucre; cal.-segm. linear, acute, about as long as ov.; cor.-tube short, $\frac{3}{8}$ in., broad, lobes lanceolate, acuminate, erect; style thick, tapering, exserted for $\frac{1}{2}$–$\frac{3}{4}$ in.; fruit $\frac{1}{4}$ in., globose, with a crown of cal.-segm.

Forests of the upper montane zone; rather rare. Adam's Peak; Dimbula; N. Eliya. Fl. March, April; greenish-white.

Endemic.

Very unlike the other species in the inflorescence. Becomes black when dried.

36. **COFFEA,** *Linn.*

Small shrubs, stip. small; fl. solitary or in threes, axillary (often apparently terminal), cal.-limb many-toothed or none; cor.-tube long, lobes 5, spreading, twisted in bud; stam. inserted in throat of cor., fil. 0, anth. linear; ov. 2-celled, with a single ovule in each cell attached by centre to septum, stigmas 2, linear; fruit containing 2 cartilaginous pyrenes; seeds with a deep ventral groove, endosperm horny.—Sp. 20; 6 in *Fl. B. Ind.*

Stip. persistent, spinescent; cal.-limb many-toothed . . . . 1. C. WIGHTIANA.
Stip. caducous; cal.-limb. 0 . . . . . 2. C. TRAVANCORENSIS.

1. **C. Wightiana,** *Wall. Cat. n.* 6246 (1828). **Kaddumallikai,** *T.*
Thw. Enum. 154. C. P. 1654.
Fl. B. Ind. iii. 154. Wight, Ic. t. 1598 (not good).

A small bush, with white bark and many rigid, stout, divaricate branches (often suppressed and very short), young shoots puberulous; l. small, $\frac{1}{2}$–$1\frac{1}{2}$ in., nearly sessile, oval, tapering to base, obtuse, glabrous, stip. short, rigid, sharply pointed, persistent and becoming small curved prickles, especially on the short lat. branches; fl. solitary, sessile, on the short lat. branches; cal.-limb with many teeth; cor.-tube about $\frac{1}{2}$ in., lobes oblong-oval, obtuse, rather more than half as long as tube; fruit not seen, "$\frac{1}{3}$ in., much broader than long, didymous."

Dry region; rather rare. Jaffna; Mihintale; Uma-oya; Atakalan Korale. Fl. Aug., Sept.; white, very sweet-scented.

Also in S. India.

A resinous gum envelops the calyx. This seems to me abundantly distinct from the next.

2. **C. travancorensis,** *W. & A. Prod.* 435 (1834). [PLATE LIII.] *Coffea triflora,* Moon Cat. 15 (non Forst.). Thw. Enum. 154. C. P. 2458. Fl. B. Ind. iii. 154. Bot. Mag. t. 6746.

A small shrub, branchlets stiff, slender, thickened at nodes, twigs flattened, slightly pubescent; l. small, $1\frac{1}{2}$–3 in., oval or lanceolate, acute at base, acuminate, acute or obtuse at apex, quite glabrous, rather thin, petiole very short, stip. small, long-triangular, acute, soon falling; fl. solitary or in threes, very shortly stalked, each with two minute, linear bracts at base; cal. very small, puberulous, limb quite absent; cor.-tube $\frac{5}{8}$ in., glabrous within, lobes ovate-oblong, acute, rather shorter than tube; ov. surmounted by thick disk surrounding style, stigmas large, erect; fruit $\frac{3}{8}$ in. diam., distinctly didymous, broader than long, slightly puberulous when young, black.

Moist and intermediate region to 3000 ft.; rather rare. Kalutara (Moon); Kurunegala (Gardner); Negombo; Deltota; Doluwe Kande. Fl. April–June; white, very sweet-scented.

Also in Travancore.

Moon's S. name for this is 'Gas-pitcha,' and the flowers much resemble those of a jasmine.

C. arabica, L., the common Arabian coffee, introduced to Ceylon from Java by the Dutch about 1690, and largely cultivated, is often found about the sites of former native gardens or plantations, but has shown no tendency to become naturalised.

37. MORINDA,* *Linn.*

Trees or climbing shrubs, stip. various; fl. in dense stalked heads, the peduncle often taking the place of one l. of the pair and thus leaf-opposed but within the stip., or terminal; cal.-tube more or less fused with adjacent ones in the head, limb short or 0, segm. usually 0; cor. tubular, lobes 4 or 5, valvate, hairy at mouth; stam. 4 or 5, anth. oblong; ov. 2 or spuriously 4-celled with 2 or 4 ovules, stigmas 2, linear; fruit in each head concrete into a fleshy globose mass, pyrenes 3 or 4 to each berry, 1-seeded.—Sp. 40; 7 in *Fl. B. Ind.*

Trees; cor.-lobes 5.
L. under 6 in., dull . . . . 1. M. TINCTORIA.
L. over 6 in., shining . . . . 2. M. CITRIFOLIA.
Climbing shrub: cor.-lobes 4 . . . . . 3. M. UMBELLATA.

Fl. conspicuously dimorphic.

* *Morinda,* a name given by Vaillant; said to be a contraction of *Morus indica,* and doubtless alluding to the compound fruit.

1. **M. tinctoria,** *Roxb. Hort. Beng.* 15 (1814). **Ahu,** *S.* **Manchavanna,** *T.*

M. exserta, Roxb., Thw. Enum. 145. C. P. 1668.

Fl. B. Ind. iii. 156. Bedd. Fl. Sylv. t. 220 (*M. citrifolia*).

A usually small tree, bark thick, spongy, with deep longitudinal furrows, branchlets thickened at nodes, l.-scars prominent, twigs compressed, glabrous; l. 3–5 in., lanceolate, tapering to base, acuminate, acute, glabrous save for tufts of hair in axils of lat. veins beneath, dull green not shining, petiole very short, stip. broadly triangular, acute, deciduous; fl. rather large, heads globose, peduncles long, solitary or rarely 2–3 together; cal.-tube about $\frac{1}{4}$ in., lobes 5, narrowly oblong, more than half as long as tube; head of fruit about $\frac{3}{4}$ in. diam., globose, fleshy, pyrenes usually 4, oblong.

Dry region; rather common. Jaffna; Trincomalie; Anuradhapura; Badulla District (Thwaites). Fl. Sept., Oct.; white, very sweet-scented.

Also in India and Malaya.

Wood moderately hard and heavy, brownish-orange, durable. The reddish-brown bark of the root affords a red dye, much used for dyeing cloth, but the tree is not cultivated in Ceylon. The leaves are a remedy for diarrhœa, and an external application to wounds. The plant dries a dark metallic brown.

2. **M. citrifolia,** *L. Sp. Pl.* 176 (1753). **Ahu,** *S.*

Fl. Zeyl. n. 82. Moon Cat. 15. *M. bracteata*, Roxb., Thw. Enum. 144. C. P. 765.

Fl. B. Ind. iii. 155. Wight, Ill. t. 126 (*M. bracteata*). Rheede, Hort. Malab. i. t. 52.

A small tree, with yellowish-white bark, branchlets stout, marked with l.-scars, twigs glabrous; l. closely placed, large, 6–8 in., oval, attenuate at base, shortly acuminate, acute, glabrous, l. shining, with glandular pits in axils of lat. veins beneath, rather thick, bright apple-green, veins strongly marked, prominent beneath, pellucid, petiole $\frac{1}{2}$ in., very stout, stip. short, broad, obtuse, persistent; fl. as in the last, but smaller; cor.-lobes 5; head of fruit ovoid, over 1 in. long, very fleshy, white, some of the enlarged cal. of the lowest fruits developing large and leafy bract-like segm.; pyrenes ovoid, compressed, winged on one edge, convex on one surface, concave on the other.

Near the coast in the moist region; rather rare, often cultivated. Colombo; Galle; Tangalle. Fl. October; white.

Also in Andaman Is., Malaya, Pacific Is., N. Australia; doubtfully wild in Peninsular India.

There are only drawings—no specimens—of this in Hermann's collection. The bract-like leafy appendages to some of the lower calyces are persistent in the head of fruit, and very characteristic.

This is a Malayan and Pacific maritime plant, and, like several others

of that group, native here only in a few spots on our south-western coast, but it is much cultivated in gardens. It is, I believe, quite distinct from the dry country *M. tinctoria*, of which it has been considered as a cultivated variety.

The root-bark affords a red dye as in *M. tinctoria*.

3. **M. umbellata,** *L. Sp. Pl.* 176 (1753). **Kiri-wel, Maha-kiri-wel,** *S.*

Fl. Zeyl. n. 81. *M. scandens*, Roxb., Moon Cat. 15. Thw. Enum. 145. C. P. 1669.

Fl. B. Ind. iii. 157. Rheede, Hort. Malab. vii. t. 27.

A scrambling shrub, climbing by very long, slender, sarmentose, divaricate branches, bark grey, striate, internodes very long, young parts puberulous; l. rather small, 2–4 in., usually oblong-lanceolate, but sometimes broadly oval, tapering or acute at base, shortly acuminate, acute, glabrous, thin, dark green, venation finely reticulate, pellucid, petiole $\frac{1}{4}$ in., often twisted, stip. connate, sheathing, membranous, subpersistent; fl. few together, heads small, less than $\frac{1}{2}$ in. diam., globose, stalked, peduncles 4–10 together in terminal umbels; cal.-limb short, perfectly truncate; cor.-tube very short, lobes 4, oblong-oval, much longer than tube; head of fruit small, about $\frac{1}{3}$ in. diam., lobulated, smooth, scarlet.

Moist region extending up to 4000 ft. or higher; common.

Fl. Feb.; white or greenish.

Throughout the Tropics of Asia.

At the higher elevations this often forms a small bush with no tendency to climb, and with much broader and thicker leaves.

38. PRISMATOMERIS, *Thw.*

Shrub, stip. shortly connate, often split; fl. few, terminal, unisexual; cal.-limb cup-shaped, truncate with 5 tooth-like segm.; cor.-tube glabrous within, lobes 5, very thick and prismatic on section, valvate; stam. 5, inserted in tube, small; ov. 2-celled, with a single ovule in each cell, stigmas 2, spreading; fruit a berry completely filled by 2 large seeds; seed rounded on back, deeply excavated on ventral surface, endosperm horny.—Sp. 3; 2 in *Fl. B. Ind.*

P. albidiflora, *Thw. in Kew Journ. Bot.* viii. 269 (1856).

Thw. Enum. 154. C. P. 728.

Fl. B. Ind. iii. 159. Kew Journ. Bot. viii. t. 7, f. A. Bedd. Ic. Pl. Or. t. 93, and Fl. Sylv. Anal. Gen. t. 29, f. 4 (not good).

A shrub 10–12 ft., much divaricately branched, bark grey, branchlets sharply quadrangular compressed, thickened at nodes, yellow, polished; l. $2\frac{1}{2}$–5 in., oval or lanceolate-oval, tapering to base, shortly acuminate, subacute, glabrous, venation conspicuous, reticulate, petiole very short, stip.

forming a short tube; fl. moderate in size, 1–4, usually in pairs at end of twigs, ped. 1–1½ in., slender, divaricate; cal. glabrous; cor.-lobes oblong, acute, excavated at base, about as long as tube; fil. very short; fruit ⅜ in., nearly globose, broader than long and very slightly didymous, purple.

Var. β, **Fergusonii,** *Trim.* *P. Fergusonii*, Thw.* ex. Bedd. Fl. Sylv. Fl. Man. 134, 10. Fl. B. Ind. iii. 159.

Pedicels 5–10, in terminal usually stalked umbels, corolla-segments less fleshy.

Moist region, rare, extending up to 4000 ft. Between Negombo and Kurunegale; Ambagamuwa; Dolosbagie; Maskeliya. Var. β, Colombo (Ferguson). Fl. March, April; yellowish-white, sweet-scented.

Also in Khasia, Burma, Malaya; not in Peninsular India.

Var. β is maintained as a species in Fl. B. Ind. on the ground of Beddome's statement that the corolla-lobes are imbricate. This, is, however, not the case; the æstivation is strictly valvate, the prismatic lobes forming an angular bud. Indeed, their extremely fleshy nature necessitates a valvate or reduplicate-valvate æstivation. The stipules exude a resinous gum. I have never seen 4-merous flowers.

39. PSYCHOTRIA,† *L.* (part).

Shrubs, rarely climbing, branchlets usually compressed and glabrous, stip. various, often connate, fl. small, in terminal cymes usually without bracts; cal.-limb long or short, segm. broad or narrow, sometimes caducous; cor.-tube short, straight, hairy or glabrous in throat, lobes 5 (rarely 4), valvate; stam. inserted in throat of cor.; ov. 2-celled, with one erect ovule in each cell, stigmas 2; fruit small, berry-like, with 2 plano-convex, 1-seeded pyrenes; endosperm plane or ruminate.—Sp. 500; 52 in *Fl. B. Ind.*

Nine of our 13 species are endemic.

Pyrenes without furrows on either surface; endosperm ruminate (*Grumilea*).
  Branches of cyme whorled.
    Leaves glabrous.
      Lat. veins invisible . . . . 1. P. STENOPHYLLA.
      Lat. veins conspicuous.
        Berry ¼ in. long.
          Cal.-limb long . . . . 2. P. GLANDULIFERA.
          Cal.-limb very short . . . 3. P. GARDNERI.
        Berry near ½ in. long . . . . 4. P. THWAITESII.
    Leaves hairy beneath . . . . 5. P. WIGHTIANA.
  Branches of cyme in pairs . . . . 6. P. ELONGATA.

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* Thwaites informed me that he had no recollection of bestowing this as a specific name, and that he never considered the plant specifically distinct from *P. albidiflora*.

† *Psychotria* altered from *Psychotrophum*, the name given to a W. Indian plant by P. Browne, now *Psychotria Brownei*, Spreng.

Pyrenes with 4 furrows on back and 2 shallow ones on face; endosperm not ruminate . 7. P. SARMENTOSA.
Pyrenes with 2 broad furrows on back, none on face; endosperm not ruminate.
Fl. sessile.
L. over 6 in., stip. ciliate . . . . . 8. P. MOONII.
L. under 4 in., stip. not ciliate . . . 9. P. SORDIDA.
Fl. pedicellate.
Petiole over 1 in. . . . . . . 10. P. LONGEPETIOLATA.
Petiole under $\frac{1}{2}$ in.
Lat. veins numerous.
Cal.-segm. linear-lanceolate . . 11. P. PLURIVENIA.
Cal.-limb nearly truncate . . . 12. P. FILIPES.
Lat. veins few; cal.-segm. triangular . 13. P. BISULCATA.

1. **P. stenophylla,** *Hk. f. in Fl. B. Ind.* iii. 161 (1880).
Grumilea stenophylla, Thw. Enum. 147. C. P. 2609.
Fl. B. Ind. iii. 161.

A much dichotomously branched bush, branchlets thickened at the nodes, smooth and shining; l. 3–5 in., linear or linear-lanceolate, tapering at both ends, acute, quite glabrous, midrib broad, conspicuous, lat. veins scarcely visible, rather coriaceous, margins somewhat recurved, pale green, petiole very short or none with a tuft of brown hair in axil, stip. large, connate, ovate, obtuse, glabrous, caducous; fl. sessile, surrounded with ferrugineous hair, in small globose, stalked clusters, usually in a whorl of 4, and a terminal one forming a small pedunculate, pyramidal cyme (occasionally axillary); cal.-segm. very shallow, cor.-tube very short, pilose in throat, lobes 4, ovate, acute; berry $\frac{1}{3}$ in., broadly ovoid, shining, bright purple; pyrenes without furrows, endosperm ruminate.

Moist low country to 2000 ft.; rare. Nillowe Kande; Ratnapura; Reigam Korale; Ambagamuwa. Fl. Feb., March; green.
Endemic.

2. **P. glandulifera,** *Thw. ex Hk. f. Fl. B. Ind.* iii. 161 (1880).
C. P. 3911.
Fl. B. Ind. iii. 161.

Shrub, branchlets glabrous; l. 4–7 in., oblong-lanceolate, acute at base, suddenly acuminate, acute, glabrous, pale beneath, with the lat. veins conspicuous, and with large and deep glandular pits in their axils, petiole $\frac{1}{4}$–$\frac{3}{8}$ in., stip. as in the last; fl. few, nearly sessile, in short, sessile, trichotomous cymes; cal.-limb long, segm. very shallow, acute; berry $\frac{1}{4}$ in., ovoid, crowned with large cal.-limb.

Only found near Adam's Peak, where the C. P. specimens (in bud and fruit) were collected, March, 1866.
Endemic.
I have seen only the C. P. specimens, and unfortunately the fruit is not sufficiently ripe to show the character of the seed.

3. **P. Gardneri,** *Hk. f. in Fl. B. Ind.* iii. 161 (1880).
Grumilea Gardneri, Thw. Enum. 147. C. P. 1718.
Fl. B. Ind. iii. 161.

A shrub, twigs glabrous; l. large, 6–9 in., obovate-oblong, very much tapering to base, very abruptly narrowed into a long tail-like end, obtuse at apex, margins narrowly recurved, glabrous, lat. veins numerous, fine, distinct, petiole obscure, stip. ovate, obtuse, quickly falling; fl. sessile, in small heads, cymes large, paniculate with whorled branches, bracts conspicuous, short, broad, rounded; cal.-limb very short, segm. obscure; berry small, $\frac{1}{4}$ in., ovoid, black, pyrenes without furrows, endosperm ruminate.

Lower montane zone; rare. Ramboda (Gardner); about Balangoda, abundant. Fl. white.
Endemic.

4. **P. Thwaitesii,** *Hk. f. Fl. B. Ind.* iii. 162 (1880).
Grumilea nigra, Gaertn.(?), Arn. Pug. 25. *G. nudiflora*, Thw. Enum. 147 (non W. and A.). C. P. 18.
Fl. B. Ind. iii. 162.

A shrub, branchlets stout, glabrous, l. rather large, 4–9 in., oblong-lanceolate, often somewhat obovate, acute at base, acuminate, acute at apex, glabrous, midrib very strong, lat. veins distinct, petiole $\frac{1}{4}$–$\frac{1}{2}$ in., stip. broadly oval, obtuse; fl. nearly sessile, with brown hair at their base, in small round heads, cymes small, long-stalked, pyramidal, with whorled branches; cal.-limb deciduous, segm. obscure, broad; cor.-tube very short; berry rather large, $\frac{3}{8}$–$\frac{1}{2}$ in., broadly ovoid, without cal.-limb, pyrenes without furrows, endosperm much ruminated.

Var. β **coronata,** *Hk. f. l.c.*

L. smaller and broader; cal.-segm. ovate, acute, persistent and crowning the fruit.

Moist region, from about 1000 to 6000 ft.; very common in damp forests. Var. β at the higher elevations. Fl. Jan.–March; greenish.
Also in S. India.
This is almost certainly *Grumilea nigra*, Gaertn. Fruct. i. 138 and t. 28, and the type of that genus (now combined with *Psychotria*). He gives 'Kogdala' as the Sinhalese name.
Var. β is very close to *P. congesta*, W. and A., of the Nilgiri Hills.

5. **P. Wightiana,** *Hk. f. Fl. B. Ind.* iii. 167 (1880).
Lasianthus? dubius, Wight in Calc. Journ. Nat. Hist. vi. 516. *Grumilea Wightiana*, Thw. Enum. 148. C. P. 586.
Fl. B. Ind. iii. 167.

A small shrub, branchlets stout, roughly hairy; l. large, 5–9 in., oval or lanceolate, acute at base, acuminate, acute,

glabrous above, softly hairy beneath, petiole ½–¾ in., very hairy, stip. large, connate, oblong, obtuse, pilose; fl. sessile in small round heads, cymes large, peduncled or sessile, lax, very hairy, branches long, whorled, divaricate; cal.-limb large, erect, very hairy, segm. short, obtuse, glabrous within; berry ⅜ in., broadly ovoid, crowned with cal.-limb, very hairy, pyrenes without furrows, endosperm ruminate.

Var. β **affinis,** *Hk. f. l. c.* *Grumilea affinis*, Thw. l. c. C. P. 2706.

L. smaller, linear-lanceolate, less hairy beneath; cal.-segm. acute.

Moist low country by streams; rare. Ambagamuwa; Ratnapura; var. β, Hewesse; Palabadala; Kitulgala. Fl. Feb.–April; green. Endemic.

Wight's specimens, which were without fruit and hence misled him as to the genus, were communicated to him by Col. Thacker (and also collected by himself) in April, 1836.

6. **P. elongata,** *Hk. f. Fl. B. Ind.* iii. 163 (1880).
Grumilea elongata, Wight, Thw. Enum. 147. C. P. 1719.
Fl. B. Ind. iii. 163. Wight, Ic. t. 1036.

A shrub, twigs very smooth; l. 3–4½ in., obovate-oval, obtuse at base, suddenly and shortly acuminate, acute, glabrous, lat. veins numerous, 12–16 on each side, parallel, prominent, usually with deep glandular pits in the axils beneath, petiole ¼ in., stout, stip. short, pubescent, partially persistent; fl. nearly sessile, small, in dense clusters, cymes pedunculate, narrow, branches short, opposite, peduncle with 2 large sheathing stipular bracts at base; cal.-segm. triangular, acute, caducous; cor.-lobes rather shorter than wide tube; berry ⅓ in., ovoid or slightly pyriform, without a cap of cal.-limb, faintly vertically 10-ribbed, pyrene without fur rows, endosperm ruminate.

Montane zone to 7000 ft.; common. Fl. Feb.–April; white. Also in mountains of S. India.

7. **P. sarmentosa,** *Bl. Bijdr.* 964 (1826). **Wal-gonika,** *S.*
P. scandens, Moon Cat. 14. Thw. Enum. 148. C. P. 1712.
Fl. B. Ind. iii. 165. Wight, Ic. t. 1038.

A shrub, climbing by adventitious rootlets, stems sarmentose, cylindrical, smooth, with long internodes; l. rather small, 2½–3 in., oval or oval-lanceolate, rounded or acute at base, shortly acuminate, subacute, glabrous, lat. veins few, faintly marked, petiole ¼ in., stip. connate and sheathing, acute; fl. small, shortly stalked, cymes lax, corymbose, branches opposite, divaricate; cal. pilose, segm. broadly triangular, acute; cor.-tube with a ring of dense yellow hairs

in mouth, lobes oval-oblong, obtuse; berry nearly ½ in., globular, without a cal.-crown, smooth, white, pyrenes with 4 furrows and 5 ribs down the back and 2 shallow furrows on ventral surface, endosperm not ruminate.

Low country up to 3000 ft. or more; common. Fl. Jan.–March; green.

Also in India and Malaya.

The fruit is a white globular berry, not capped with calyx teeth, and when fresh is quite without ribs or furrows, but, when dried and the pulp shrivelled up, it appears strongly 10-ribbed, as in Wight's figure above quoted.

8. **P. Moonii,** *Hk. f. Fl. B. Ind.* iii. 170 (1880).
Grumilea Moonii, Thw. Enum. 148. C. P. 585.
Fl. B. Ind. iii. 170.

A large shrub, branchlets glabrous; l. 6–8 in., oblong-oval or slightly obovate, tapering to base, abruptly acuminate, acute, glabrous on both sides, thin, lat.-veins numerous, curved, often with glandular pits in axils beneath, petiole ½–1 in., stip. large, oblong, connate, obtuse, ciliate; fl. sessile, in dense heads, with numerous large rotundate, strongly ciliate, persistent bracts, cymes glabrous, with long opp. branches, the lowest pair strongly deflexed; cal.-limb large, tubular-cup-shaped, segm. obtuse, strongly ciliate; berry ⅜–½ in., oblong, crowned with large cal.-limb, smooth, pyrenes flat on ventral surface, with 2 broad shallow furrows on back, endosperm plane.

Moist country below 1000 ft.; rare. Reigam Korale (Thwaites); Pahingale, Pasdun Korale. Fl. June, September; white.
Endemic.

9. **P. sordida,** *Thw. Enum.* 149 (1859).
C. P. 333 (355, 1716).
Fl. B. Ind. iii. 170.

A much-branched bush, branchlets slender, glabrous or minutely pubescent; l. rather small, 2–4 in., lanceolate-oblong, tapering to base, long-acuminate, very acute, glabrous, rather thick, lat. veins horizontal, usually inconspicuous, petiole ¼–⅜ in., stip. broad, connate, acute or obtuse; fl. sessile in clusters of 3, cyme sessile, branches usually 3, short, slender divaricate or deflexed, no bracts; cal.-limb very short or none, segm. small, linear, acute; cor.-tube inflated, glabrous within; disk very large and prominent; berry ⅓–½ in., oblong, capped with small cal., pyrenes with 2 deep and wide furrows on back, endosperm plane.

Upper montane zone; rather common. Fl. Feb.–April; greenish-white.

Endemic.

Varies a good deal in shape of leaves; at the higher elevations they are often smaller, broadly oval, less acuminate, coriaceous with recurved margins.

10. **P. longepetiolata,** *Thw. Enum.* 149 (1859).
C. P. 2707.
Fl. B. Ind. iii. 170.

A shrub, branchlets glabrous; l. 3½–6 in., oval or oblong-oval, rounded and often unequal or acute at base, abruptly acuminate, acute, glabrous and shining, petiole very long, 1¼–2 in., stip. oblong, acute, deciduous; fl. on short ped., cymes pedunculate, pyramidal, branches whorled; cal.-limb short, spreading, segm. broad, obtuse; cor.-tube very short, with a ring of hair in throat; disk large; berry ½ in., oblong-ovoid, pyrenes very widely and deeply 2-grooved on back.

Lower montane zone, 3000–4000 ft.; very rare. Diyabetane, Sabaragamuwa; Pitigala-Kande, near Balangoda. Fl. March and Sept.; green.
Endemic.
The leaves dry yellow.

11. **P. plurivenia,** *Thw. Enum.* 149 (1859).
C. P. 2652.
Fl. B. Ind. iii. 170.

A shrub, with slender divaricate glabrous branchlets; l. small, 2–4 in., oblong, acute at both ends, glabrous, lat. veins numerous, fine, nearly horizontal, united by an intramarginal one, petiole short, stip. tapering into long filiform point, deciduous; fl. on short, slender ped., usually in pairs, cymes very lax, with long filiform spreading branches, few-fld.; cal.-limb short, segm. rather long, linear-lanceolate, acute; cor.-tube hairy at mouth, lobes long, oblong, acute; berry nearly ½ in., oblong, crowned with erect cal.-segm., pyrenes broadly 2-furrowed on back.

Lower montane zone, 3000–4000 ft.; very rare. I have only seen the C. P. specimens collected in Hewahette Dist. in 1852. Fl. Oct.; white.
Endemic.

12. **P. filipes,** *Hk. f. Fl. B. Ind.* iii. 170 (1880).
P. bisulcata, var. *β*, Thw. Enum. 148. C. P. 1720.
Fl. B. Ind. iii. 170.

A shrub, branchlets glabrous, l. 2½–6½ in., linear-lanceolate, tapering to base, acuminate, acute, glabrous, not thick, lat. veins numerous, 10–20 or more, petiole very short, stip. broad, deciduous; fl. on slender ped., cymes small, lax, with slender irregular branches; cal.-limb cup-shaped, nearly truncate; berry ⅜–⅝ in., oblong, truncate, pyrenes with 2 deep furrows on back.

Moist region from 2000–4000 ft.; rare. Hantane (Gardner); Sabaragamuwa (Thwaites). Fl. March.
Endemic.

13. **P. bisulcata,** *W. and A. Prod.* 434 (1834). [PLATE LIV.]
P. asiatica, Moon Cat. 14 (non L.*). Thw. Enum. 148 (excl. var. β). C. P. 158.
Fl. B. Ind. iii. 170. Wight, Ic. t. 1039.

A shrub, with rather stout cylindrical glabrous and shining branches; l. 1½–4 in., lanceolate or obovate-lanceolate or oval, tapering to base, shortly acuminate, acute or subacute, glabrous, paler and rather silvery beneath, rather thick, lat. veins 7–10, depressed above, rather prominent beneath, often with very deep pits in their axils, which appear as warts on upper surface, petiole ¼–½ in., stip. ½ in., oblong, acute, membranous, soon falling; fl. on short ped., rather large (for genus), cymes usually shorter than l., lax with divaricate opp. branches; cal.-limb cup-shaped, segm. short, triangular, acute; berry ½ in., ovoid-oblong, crowned with large cal.-limb, smooth, pyrenes with 2 deep grooves on back.

Upper montane zone; very common. Fl. March–May; green.
Also in the Nilgiri Mountains.

P. vaginans, DC. Prod. iv. 520 (*Ophioxylon arboreum*, Kœnig in Hb. Royen), from Ceylon, is *Gaertnera Kœnigii*, Wight (Loganiaceæ).

40. CHASALIA, *Comm.*

A small shrub, stip. usually bifid. subpersistent; fl. rather small, dimorphic, in terminal cymes; cal.-limb very short, segm. 5 (or 6), short; cor.-tube slightly dilated above, somewhat curved, glabrous within or with a few hairs at insertion of stam., lobes 5, much shorter than tube, valvate; anth. long, sagittate at base; ov. 2-celled, with one ascending ovule in each cell, styles long, spreading; disk very large and prominent; fruit a berry, pyrenes 2, very thin, very concave on ventral surface, cup-shaped (crescent-shaped on section), endosperm not ruminate.—Sp. 10; 2 in *Fl. B. Ind.*

C. curviflora, *Thw. Enum.* 150 (1859).
C. P. 1714.
Fl. B. Ind. iii. 176. Wight, Ill. t. 127 (*Psychotria ambigua*).

A slender shrub, twigs compressed, glabrous; l. 3–9 in., from oval to linear-lanceolate (usually 3–5 in. and lanceolate),

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* Linnæus's *P. asiatica*, the basis of the genus, is really a W. Indian plant, now *P. Brownei*, Spr.

tapering to base, acuminate, acute or obtuse, glabrous, thin, lat. veins curved, anastomosing within the margin, rather prominent beneath, petiole obscure, $\frac{1}{4}$–1 in., stip. short; fl. sessile, usually in threes, cymes small, stalked, terminal, trichotomous, peduncle 1 in., glabrous, pink or white, bracts linear, small; cal. glabrous, segm. broad, acute or apiculate; cor. thick, tube rather slender, lobes oblong, obtuse; berry $\frac{1}{2}$ in., depressed-globose, tipped with withered cal.-segm., pulpy, inky-purple, pyrenes dorsally compressed.

Moist region up to 5000 ft., or higher; rather common, especially above 3000 ft. Fl. Jan.–April and July; pinkish-white, calyx purple.

Also in India, Burma, Malaya.

C. lurida, Miq. Fl. Ind. Bat. ii. 282 (1856), is an earlier name. The petioles and midrib beneath are usually stained with dark purple. Var. *longifolia*, Hk. f.. has longer more oblong l. with the lat. veins more numerous and horizontal; we have it from Reigam Korale.

41. **GEOPHILA,** *Don.*

A small creeping herb, stip. broad, subpersistent; fl. few, moderate-sized, terminal; cal.-segm. 5, long, linear-lanceolate; cor.-tube long, lobes 5, valvate; stam. inserted low down in tube, anth. sagittate at base; ov. 2-celled, with 1 erect basal ovule in each cell, stigma bilobed; fruit a berry, pyrenes 2, plano-convex, not grooved, endosperm plane.—Sp. 8–10; 1 in *Fl. B. Ind.*

G. reniformis, *D. Don, Prod. Fl. Nepal.* 136 (1825). **Agu-karni,** *S.*

Psychotria herbacea, L., Moon Cat. 14. Thw. Enum. 150. C. P. 1705. Fl. B. Ind. iii. 178. Wight, Ic. t. 54.

Small, herbaceous, stems prostrate, rooting at the nodes, filiform, puberulous, with short erect branches; l. small, $\frac{1}{2}$–1 in., ovate-reniform, obtuse, slightly pubescent or glabrous, paler beneath, petiole erect, $\frac{1}{2}$–1 in., pubescent, stip. broadly ovate, obtuse; fl. on short ped., 1–3 together, with 2 linear bracts beneath each, terminal; cal.-segm. much longer than tube, acuminate, ciliate; cor. slightly pubescent outside, tube dilated upwards, lobes oblong, acute, shorter than tube; berry $\frac{3}{8}$ in., globose, crowned with large cal.-limb, smooth, pulpy, red, pyrenes small, flat and smooth on ventral, convex, rough and bluntly keeled on dorsal surface.

Moist low country to 3000 ft.; rather common (according to Thwaites), but I have met with it but rarely. Fl. May and June.

In most parts of Tropics of Asia, Africa, and America.

Moon's locality is Kalutara; he also gives as S. name 'Koturu-bedda.'

42. **LASIANTHUS,** *Jack.*

Shrubs, l. usually much acuminate, with arching lat.-veins connected by transverse veinlets, stip. more or less triangular, fl. small, sessile or nearly so, in axillary, usually sessile heads or cymes; cal.-segm. 4 (or 5), persistent; cor.-tube funnel-shaped, villous in throat, lobes 4 (or 5), hairy; stam. inserted in cor.-throat, fil. short, anth. oblong; ov. 4- (or 5-) celled, crowned with large fleshy disk, with 1 erect ovule in each cell, stigma 4- (or 5-) lobed; fruit a small berry, containing 4 or 5 bony triquetrous pyrenes.—Sp. 80; 52 in *Fl. B. Ind.*

I have mainly followed the Fl. B. Ind. in this difficult genus, but feel no certainty as to the limitations or characters of Sp. 2–8. These dingy, unattractive shrubs form an undergrowth in shady forests, and require further investigation; I do not find the cal.-segm. or number of lat. veins very constant. All our species are considered to be endemic, but a critical comparison with those of S. India is needed.

Fl. surrounded with long bracts; cymes peduncled . 1. L. MOONII.
Fl. without bracts.
  Cymes sessile.
    Cal.-segm. linear-lanceolate.
      L. thick, hairy beneath . . . . . 2. L. THWAITESII.
      L. thin, glabrous beneath . . . . . 3. L. RHINOPHYLLUS.
    Cal.-segm. triangular.
      Cal.-segm. obtuse . . . . . . 4. L. WALKERIANUS.
      Cal.-segm. acute.
        L. not cordate at base.
          L. hairy beneath; fl. in clusters . . 5. L. GARDNERI.
          L. glabrous; fl. usually solitary . . 6. L. OLIGANTHUS.
        L. cordate at base . . . . . 7. L. OBLIQUUS.
    Cal.-segm. tooth-like (limb truncate) . . 8. L. STRIGOSUS.
  Cymes on a short peduncle . . . . . 9. L. VARIANS.

1. **L. Moonii,** *Wight in Calc. Journ. Nat. Hist.* vi. 504 (1845). *Mephitidia Moonii*, Thw. Enum. 145, 420. C. P. 92, 3997. Fl. B. Ind. iii. 180.

A slightly branched shrub, branches stout, usually very hispid with shaggy hair; l. 3–6 in., oval or lanceolate, acute or rounded at base, acuminate, subacute, more or less hispid on both sides, especially beneath, often bullate above, lat. veins 7 or 8, very prominent beneath, petiole $\frac{1}{2}$ in., with thick spreading coarse hair, stip. ovate, obtuse, hairy, caducous; cymes dense, capitate on short, stout, hispid peduncles or nearly sessile, several in each axil, bracts numerous, as long as fl., the outer ones broady ovate, the others linear, very strongly hispid or ciliate with coarse hair; cal.-segm. long, linear, acuminate, hispid; cor.-lobes short; berry $\frac{1}{4}$ in., broadly ovoid, hispid, scarlet.

Moist low country up to 3000 ft.; rather rare. Sabaragamuwa Dist. frequent; Morowak Korale; Hewesse; below Adam's Peak. Fl. March; white.

Endemic.

Occasionally, as in C. P. 3997, the stems and upper surface of the leaves are glabrous, as was the case with the original specimen described by Wight; in the Hewesse specimens when living the hairs were a brilliant pink in colour, giving the plant a very ornamental appearance.

2. **L. Thwaitesii,** *Hk. f. Fl. B. Ind.* iii. 185 (1880).
Mephitidia tomentosa, Thw. Enum. 145. *L. strigosus*, Thw. Enum. 420 (part). C. P. 2711.
Fl. B. Ind. iii. 185.

A shrub, branchlets slightly compressed when young, densely tomentose with brown hair; l. rather small, 2–3½ in., narrowly lanceolate, acute at base, tapering into long attenuate acute apex, glabrous and shining above, tomentose-hairy beneath, rather thick, lat. veins 5, much curved, prominent beneath, petiole ¼ in., stip. pubescent; fl. solitary or few; cal. hairy, segm. usually linear-lanceolate, as long as cor.-tube; cor. hairy outside; berry ⅓ in., crowned with cal.-segm., hairy, black, pyrenes oblong, channelled down ventral side.

Var. β, **nitidus,** *Thw. in Fl. B. Ind.* iii. 189. C. P. 3910.

L. rather smaller, glabrous and shining on both surfaces, or puberulous on veins beneath.

Moist region at about 3000 ft.; very rare. Only at Laxapanagala in Ambagamuwa in 1853. Var. β more common; Adam's Peak; Hakgala. Fl. Feb., March; white.

Endemic.

The Fl. B. Ind. refers var. β to the *L. strigosus* of that work, with which it does not at all agree, but is connected with the present type by pubescent forms. Many fl. are abortive.

3. **L. rhinophyllus,** *Thw. Enum.* 420 (1864).
Mephitidia rhinophyllus, Thw. Enum. 145 (by error *rhizophyllus*). C. P. 361.
Fl. B. Ind. iii. 185 (*L. rhizophyllus*).

A shrub, branchlets elongated, slender, compressed when young, adpressed-pubescent; l. rather small, 2–3 in., lanceolate, acute at base, long-acuminate, acute, glabrous on both sides, thin, lat. veins 5 or 6, oblique, delicate; fl. solitary or few; cal. adpressed-hairy, segm. linear-lanceolate; fruit not seen.

Moist region; very rare. Adam's Peak (Gardner); Kukul Korale. Fl. June; white.

Endemic.

I have but scanty material for this, which is very near the last.

4. **L. Walkerianus,** *Wight in Calc. Journ. Nat. Hist.* vi. 512 (1845).
Mephitidia Walkeriana, Thw. Enum. 146. *L. protractus*, Thw. (part) Enum. 420. C. P. 289 (340).
Fl. B. Ind. iii. 186.

Branches puberulous or nearly glabrous, compressed when young; l. 3–5 in., lanceolate or linear-lanceolate, tapering to base, long-acuminate, very acute almost mucronate at apex, coriaceous, glabrous on both sides or midrib beneath slightly pubescent, lat. veins 6–8, slender, petiole very short; fl. in crowded fascicles without bracts; cal. pubescent, segm. short, triangular, rather obtuse; berry small, $\frac{1}{6}$–$\frac{1}{4}$ in., nearly globose, truncate at top, tipped with tooth-like cal.-segm., glabrous.

Moist region up to 5000 ft.; rather common. Fl. Dec.–March; white. Endemic.

A narrow-leaved form (var. *lanceolatus*, Hk. f.) is as frequent as the type. The C. P. numbers 80 and 1728 are quoted for this in Fl. B. Ind., but are again quoted for *L. strigosus*, and C. P. 290 is also given there for *L. Walkerianus*. These numbers are not now represented in Herb. Perad., but were originally included by Thwaites under *L. varians*.

5. **L. Gardneri,** *Hk. f. Fl. B. Ind.* 186 (1880).
Mephitidia Gardneri, Thw. Enum. 145. *L. strigosus*, Thw. Enum. 420 (part). C. P. 348, 3985 (?).
Fl. B. Ind. iii. 186.

Branches stout, much compressed when young, more or less covered with brown hair, becoming glabrous; l. rather large, 4–7 in., lanceolate, acute at both ends, shortly acuminate, glabrous above, more or less hairy on veins beneath, coriaceous, lat. veins 5–7, strong, very prominent beneath, petiole $\frac{1}{4}$ in., stip. narrowly triangular, acute, hairy; fl. sessile, in small, dense, crowded clusters; cal. hairy, segm. narrowly triangular, acute; berry not seen.

Upper montane zone; rare. Adam's Peak (Gardner); Nuwara Eliya; Morowak Korale. Fl. July.
Endemic.
Thwaites ultimately made one species of this and his *M. tomentosa* (*L. Thwaitesii*), and considered it to be *L. strigosus*, Wight. They are certainly very closely allied.

6. **L. oliganthus,** *Thw. Enum.* 420 (1864).
Mephitidia oligantha, Thw. Enum. 146 (excl. var. *β*). C. P. 357.
Fl. B. Ind. iii. 186.

Branches slender, slightly rough with adpressed hair; l. 2–4 in., acute or obtuse at base, acuminate, acute, with long acuminate apex, quite glabrous, rather thin, lat. veins 4 or 5, stip. small, narrow; fl. solitary (or 2 or 3), very small, sessile; cal.-segm. narrowly triangular, acute; berry very small, about $\frac{1}{6}$ in., depressed, truncate at top.

Moist region, 1000–4000 ft.; common. Hantane (Gardner); about Peradeniya; Palabadala; Morowak Korale. Fl. March.
Endemic.
Seems to flower but rarely.

7. **L. obliquus,** *Thw. Enum.* 420 (1864).
Mephitidia oligantha, var. *obliqua*, Thw. Enum. 146. C. P. 3418.
Fl. B. Ind. iii. 192.

Stems slender, nearly cylindrical, much branched, more or less strigose with adpressed hair, buds hairy; l. 2½–5½ in., nearly sessile, ovate or oblong-ovate, cordate and unequal-sided at base, acuminate, acute, glabrous and very shining above, pale and with the veins finely pubescent beneath, rather thin but stiff, lat. veins 4 or 5, much curved, fine and slender but prominent, stip. very small, soon falling; fl. very small, sessile, solitary (or 2 or 3); cal.-segm. small, triangular, acute; cor.-lobes shorter than tube; berry ⅓ in., depressed-globose, crowned with tooth-like cal.-segm., smooth, very soft, black, pyrenes nodular on surface.

Moist region up to 3000 ft.; rather rare. Singhe Raja Forest; near Balangoda; Morowak Korale; Madagatte, S. Prov.; Kitulgala. Fl. March, April; white.
Endemic.

8. **L. strigosus,** *Wight in Calc. Journ. Nat. Hist.* vi. 512 (1845).
Mephitidia strigosa, Thw. Enum. 146. *L. Walkerianus*, Thw. Enum. 420. C. P. 1725.
Fl. B. Ind. iii. 189.

Stems more or less strigose with adpressed hair, cylindrical, stout; l. large, 3–6 in., oblong-lanceolate, acute at base, acuminate, mucronate (the midrib protruded), glabrous and shining above, paler and strongly pubescent on veins beneath, lat. veins 7–9 (usually 8), spreading, strongly marked, as are also the connecting veinlets, petiole about ¼ in., stip. small, triangular, acuminate; fl. largest in the genus, sessile, crowded; cal. slightly pubescent, limb broadly tubular, truncate, ciliate, segm. small, tooth-like; cor. hairy outside, tube ¼ in., lobes shorter than tube; berry ⅙ in., nearly globose, crowned with tubular cal.-limb (which is sometimes deciduous).

Var. β, **protractus,** *Hk. f. Mephitidia protracta*, Thw. Enum. 146. *L. protractus*, Thw. Enum. 420 (in part). C. P. 354.

L. 6–8 in., very much attenuate to apex, lat. veins very oblique.

Moist and intermediate country from 1000–5000 ft.; common, and often gregarious. Fl. all the year; white.
Endemic.
This is the only species that extends beyond the moist region. In woods north of Kurunegala and on the slopes of the isolated Ritigala Mountain, it forms the principal undergrowth. Var. β was collected by Gardner, but the locality is doubtful; the specimens are too imperfect to enable it to be referred to this species with any certainty. Often (like other *Rubiaceæ*) called 'Wal-kopi' by the Sinhalese. The upper surface of the leaves is sometimes beautifully variegated with yellow.

9. **L. varians,** *Thw. Enum.* 420 (1864).
Mephitidia varians, Thw. Enum. 146. C. P. 57.
Fl. B. Ind. iii. 191.

A much-branched shrub, branchlets compressed when young, thickened at nodes, glabrous; l. usually small, 1–3 in., oval or lanceolate or oblong-lanceolate, acute at base, mucronate with excurrent midrib at apex, margins often recurved, quite glabrous, very coriaceous, lat. veins scarcely distinguishable from the general reticulate prominent venation; fl. sessile or on very short ped., in small clusters, borne on short peduncles sometimes nearly $\frac{1}{2}$ in. long; cal.-limb cup-shaped, segm. usually triangular, acute; cor. glabrous outside, tube short; berry $\frac{1}{4}$–$\frac{1}{3}$ in., crowned with erect tooth-like cal.-segm., broadly ovoid, black.

Upper montane zone; common. Nuwara Eliya; Pedurutalagala; Horton Plains; Elk Plains; Adam's Peak. Fl. Feb.–May; white. Endemic.

The Fl. B. Ind. would apparently restrict this to specimens with the inflorescence borne on a peduncle. Easily distinguished from the rest by the quite different venation of the leaves.

43. SAPROSMA, *Blume.*

Shrubs, stip. connate, with stiff bristles on margin, deciduous; fl. moderate-sized, solitary or in threes, axillary or terminal; cal.-limb cup-shaped, segm. 4, small; cor.-tube short, hairy at mouth, lobes 4, induplicate-valvate in bud; stam. 4, anth. oblong; ov. 2-celled, with 1 erect ovule in each cell, stigmas 2, fruit a berry, containing 2 thin crustaceous pyrenes. —Sp. 8; 7 in *Fl. B. Ind.*

L. sessile, subcordate at base . . . . . . 1. S. INDICUM.
L. petiolate, acute at base.
  Branchlets scabrous . . . . 2. S. SCABRIDUM.
  Branchlets smooth . . . . 3. S. ZEYLANICUM.

1. **S. indicum,** *Dalz. in Kew Journ. Bot.* iii. 37 (1851).
Serissa Gardneri, Thw. Enum. 150. C. P. 82.
Fl. B. Ind. iii. 192. Bedd. Ic. Pl. Ind. Or. t. 16 (*Serissa glomerata*).

A bush, branches slender, dichotomous, widened and flat below each node, yellowish-brown, smooth and shining; l. 2–4 in., nearly sessile, ovate, rounded or subcordate at base, acuminate, acute at apex, glabrous, stip. small with 3 bristles; fl. rather small, on short ped., 1 or 3 at apex of twigs between last pair of l.; cal.-limb short, segm. narrowly triangular, acuminate; cor.-lobes ovate, acute as long as tube; berry nearly $\frac{1}{2}$ in., broadly ovoid, shining, blue-black.

Montane zone; very rare. Only collected in forests near Galagama below Horton Plains, where it was first found by Gardner. Fl. April, May; white.

Also in S. India.

The Ceylon plant has broader and more cordate-based leaves than the Indian one, and is called var. *Gardneri* in Fl. B. Ind.

2. **S. scabridum,** *Bedd. Fl. Sylv. For. Man.* 134, 12 (1873 ?).
Serissa scabrida, Thw. Enum. 151. C. P. 3306.
Fl. B. Ind. iii. 193.

Branchlets rough, with short stiff hair; l. 2–3 in., oval, acute at base, slightly acuminate, acute, glabrous above, pilose on veins beneath, petiole $\frac{1}{4}$ in., stip. scabrous, with long bristles; fl. solitary, terminal; cal.-segm. lanceolate-linear; berry (unripe) about $\frac{1}{3}$ in., globose.

Moist low country; very rare. An imperfect specimen in Hb. Perad., with a single nearly ripe fruit and no flowers, marked 'Near Ratnapura, March, 1853,' is all the material for this species.

Endemic.

3. **S. zeylanicum,** *Bedd. Fl. Sylv. For. Man.* 136, 12 (1873 ?).
Dysodidendron zeylanicum*, Gardn. in Calc. Journ. Nat. Hist. vii. 2.
Serissa zeylanica, Thw. Enum. 150. C. P. 261.
Fl. B. Ind. iii. 193. Bedd. Ic. Pl. Ind. Or. t. 15 (*Serissa Wightii*).

A shrub, 8–12 ft., with slender erect branches, branchlets very slender, brittle, much flattened and dilated below the nodes, bark pale brownish-yellow, smooth, twigs glabrous; l. usually 2–4 in., lanceolate or oval, acute at base, acuminate, acute, often very shallowly and irregularly crenate near the end, glabrous, shining above, paler beneath, lat. veins much curved, prominent beneath, with deep glandular pits in axils, petiole very short, stip. with short bristles; fl. rather large, axillary (often from axils of fallen l.) or terminal, ped. $\frac{1}{4}$–$\frac{3}{4}$ in., slender, glabrous, with 2 small linear bracts below the middle, and often also beneath the fl.; cal. glabrous, segm. broad, shallow, apiculate; cor.-tube funnel-shaped, lobes much longer than tube, broadly ovate, acute, spreading, hairy above, thick, the broad margin thinner, turned upwards and crisped (in æstivation strongly induplicate, the bud being bluntly quadrangular); fil. very short; stigmas linear, spreading; berry over $\frac{3}{4}$ in., obovate-ovoid, tipped with small cal.-segm., smooth and shining, bright blue.

Montane zone in forests 4000–7000 ft.; common. Fl. March, April, and August; pale sulphur-yellow.

Also in S. Indian hills.

The leaves and flowers are extremely fetid, especially when bruised or

* From the very fetid odour of the plant.

withering. The colour of the fruit is an intense metallic lapis-lazuli blue. A small, narrow-leaved form occurs in the higher mountains.

44. **HYDROPHYLAX,** *Linn. f.*

A prostrate perennial herb, stip. large, adnate to l., forming a sheath; fl. rather large, solitary, axillary; cal.-segm. 4, long, persistent; cor.-tube broadly funnel-shaped, with a ring of hair at mouth, lobes 4, valvate, stam. 4, inserted in throat of cor., fil. slender, exserted; ov. 2-celled, with a single ovule in each cell peltately attached to septum, stigma 2-lobed; fruit dry, corky, compressed with sharp edges, 2-celled, 2-seeded.—Sp. 3; 1 in *Fl. B. Ind.*

H. maritima, *L. f. Suppl. Plant.* 126 (1781). **Mudu-gétakola,** *S.* *Sarissus anceps*, Gaertn. Fruct. i. 118. Moon Cat. 10. Thw. Enum. 151. C. P. 1672.
Fl. B. Ind. iii. 199. Wight, Ic. t. 760.

Perennial herb, stems numerous, prostrate, rooting at nodes, much-branched, cylindrical, stout, succulent, glabrous; l. $\frac{1}{2}$–$\frac{3}{4}$ in., sessile, more or less recurved, spathulate-oval, acute, very fleshy, smooth or slightly papillose, stip. large, forming with adnate l.-bases a cup round the stem, truncate, slightly ciliate, persistent; fl. sessile; cal.-segm. linear-lanceolate, acute, rather shorter than ov.; cor.-lobes ovate, acute, much shorter than tube; ov. 4-angled, glabrous; fruit $\frac{1}{2}$ in., oblong-ovoid, much compressed, crowned with large cal.-segm., with 3 prominent ribs on each side, glabrous and shining.

Sandy seashores; common round the island. Fl. all the year; pinkish-lilac.

Also in S. India.

Gaertner gives as the Sinhalese name for this, 'Hin-taccada.'

45. **SPERMACOCE,** *Linn.*

Annual herbs, stems quadrangular, stip. adnate to l.-base, forming a cup round the stem, strongly ciliate or pectinate; fl. small, sessile in axillary clusters, forming whorls; cal.-segm. 4, linear; cor.-tube long, lobes 4, valvate; stam. 4, inserted in throat of cor., ov. 2-celled, with a single ovule in each cell; fruit a small dry capsule, septicidally dehiscent into 2 carp., one or both of which again dehisces ventrally; seeds oblong, with a groove down ventral surface.—Sp. 150; 4 in *Fl. B. Ind.*

Capsule with both carp. ventrally dehiscent.
  L. linear; capsule $\frac{1}{8}$ in. . . . . 1. S. STRICTA.
  L. oval; capsule $\frac{1}{16}$ in. . . . . 2. S. OCYMOIDES.
Capsule with only one carp. ventrally dehiscent. . 3. S. HISPIDA.

1. **S. stricta,** *L. f. Suppl. Plant.* 120 (1781).
C. P. 1695 (part).
Fl. B. Ind. iii. 200.

Annual, stems slender, thickened at nodes, erect, quadrangular, slightly branched, angles slightly hispid, internodes very long; l. 1–2 in., sessile but much tapering to narrow base, linear, acute, mucronate, margin often revolute, more or less scabrous on both sides, bristles of stip. numerous, long, filiform; fl. few, clusters dense; cal.-segm. filiform, hairy; cor. minute; capsule $\frac{1}{8}$ in., broadly ovoid, crowned with long cal.-segm., hairy, dehiscent from above, each carpel dehiscing ventrally; seed narrowly oblong, black, dull.

Low country; apparently rare. Colombo (Ferguson). Fl. August; white.

Also in India and Trop. Asia and Africa generally.

Thwaites did not distinguish this from *S. hispida.*

2. **S. ocymoides,** *Burm. f. Fl. Ind.* 34 (1768).
Borreria ocymoides, DC., Thw. Enum. 151. C. P. 1684.
Fl. B. Ind. iii. 200. Burm. f. Fl. Ind. t. 13, f. 1.

Annual herb, stem slender, 6–12 in. high, branched at base, quadrangular, glabrous or nearly so; l. sessile or shortly petioled, $\frac{1}{2}$–$\frac{3}{4}$ in., oval, tapering at base, acute, nearly glabrous, thin, stip. short, scarcely forming a cup, bristles long; fl. very small, cymes dense, globose; cal.-segm. linear, apiculate, nearly glabrous; capsule very small, $\frac{1}{16}$ in., oblong-globose, glabrous, thin, white, both carp. ventrally dehiscent; seeds black.

Moist low country; rare. Kalutara (Moon); Galle (Gardner); Colombo (Ferguson).

Also in India, Malaya, Trop. Africa, and Mauritius.

Has the habit of *Ammannia.* I have not met with this.

3. **S. hispida,** *L. Sp. Pl.* 102 (1753). **Hin-geta-kola,** *S.* **Yar, Nattaichchuri,** *T.*
Herm. Mus. 3. Burm. Thes. 103. Fl. Zeyl. n. 62. Moon Cat. 10. Thw. Enum. 151. C. P. 1695 (part), 1696.
Fl. B. Ind. iii. 200. Burm. Thes. t. 20, f. 3.

Annual (sometimes perennial?), stems prostrate, long, sharply quadrangular, roughly hairy on the angles, stiff, internodes generally long; l. sessile, $\frac{1}{2}$–1 in., oblong-oval, acute, slightly pubescent on both sides, scabrous-ciliate on margin, rather thick, veins inconspicuous, stip. short, membranous, bristles few, long; fl. few, within the stipular cup, bracts long, filiform, hyaline; cal.-segm. twice as long as ov., linear, ciliate; cor.-tube slender, lobes short, bristly on back; capsule $\frac{1}{8}$ in., oblong-ovoid, hairy, crowned with long cal.-segm., one carp.

only ventrally dehiscent, the other closed by the septum remaining attached to it; seeds smooth, brown.

Low country in dry waste places; very common. Fl. March–August; pale violet.

Throughout India, Malaya, and S. China.

A maritime state grows in the sands at Kalpitiya; it is almost shrubby, with closely placed, small, thick, very bristly leaves with cartilaginous margins, and a larger fruit.

Hermann gives the S. name for this 'Aswanna.'

46. **RUBIA,** *Linn.*

Perennial, l. in whorls of 4; fl. small, in axillary cymes; cal.-limb 0; cor.-tube campanulate, lobes 4, valvate; stam. 4, very small, inserted in tube; ov. 2-celled with 1 erect ovule in each cell, styles 2, stigmas globose; fruit didymous, fleshy; seeds globose.—Sp. 30; 8 in *Fl. B. Ind.*

R. cordifolia, *L. Syst. Nat. ed.* 12, iii. (1768). **Manda-madini-wel, Yogana-wel,** *S.*
R. secunda, Moon Cat. 10. Thw. Enum. 151. C. P. 2705.
Fl. B. Ind. iii. 202. Wight, Ill. t. 128 bis, f. 1.

Perennial, roots very long, cylindrical, flexuose, with a thick red cortex, stems very long (often many yards), becoming slightly woody at base, flexible, tough, cylindrical, bark white, branches scandent by means of the very numerous divaricate or deflexed branchlets and petioles, quadrangular, sometimes prickly on the angles, smooth, shining; l. 4 in a whorl, $\frac{3}{4}$–$1\frac{1}{2}$ in., ovate, cordate at base, tapering to acute apex, scabrous above and on the veins beneath, and especially on the margin, with small, white recurved prickles, 5- or 7-veined from the base, stiff, often convex above, with the apex hooked, sometimes pubescent beneath, petiole about twice as long as l., usually deflexed, tapering, stiff and branch-like, deeply channelled above, triangular, with many sharp recurved prickles on the angles; fl. on short glabrous ped., cymes lax, trichotomous, glabrous; cor.-tube thick, very short, lobes ovate, obtuse; fruit about $\frac{1}{3}$ in., very didymous, the carp. almost distinct, smooth, shining, purplish-black.

Bushy places in montane zone from 3000–7000 ft.; very common. Fl. August, September; greenish-white.

Also in the mountains of India and Java, and in N. E. Asia and Trop. Africa.

Our Ceylon plant usually has the stem almost destitute of prickles. Moon seems to have first noticed this plant; his locality is Walapane. I have not been able to get a satisfactory S. name; those above given are doubtful.

The roots afford an excellent red dye, but it does not appear to be used here.

47. **GALIUM,** *Linn.*

Slender herb, l. 4–6 in a whorl; fl. minute, sessile, axillary; cal.-segm. 0; cor. rotate, without a tube, lobes 4, cut almost to base, valvate; stam. 4, inserted at mouth of cor., anth. globose; ov. 2-celled, style bifid, stigmas globose; fruit very didymous, tipped with short styles.—Sp. 150; 20 in *Fl. B. Ind.*

A genus of Temperate climates; one other species occurs in the Nilgiris.

G. asperifolium, *Wall. in Roxb. Fl. Ind.* (ed. Wall.) i. 381 (1820).
Thw. Enum. 151. C. P. 1682.
Fl. B. Ind. iii. 207 (*G. Mollugo*).

Stems very slender, prostrate, rooting at the nodes below, 2 or 3 ft. long, weak, much-branched, 4-angled, glabrous or very slightly rough on the angles; l. 4–6 in a whorl, small, $\frac{1}{4}$–$\frac{1}{2}$ in., sessile, lanceolate or linear-oblong, narrowed to base, obtuse and cuspidate at apex, glabrous, with a few coarse recurved prickles on midrib beneath, and on slightly recurved margin; fl. solitary in axils of minute bracts, forming a small dichotomous leafy inflor.; cor.-lobes ovate, sharply acuminate; stam. much shorter than cor., erect; fruit glabrous, covered with blunt warts all over.

Upper montane zone to 7000 ft.; common. Fl. August, September; pale greenish-white.

Also in mountains of India.

In the Fl. B. Ind. this is referred to the widely spread species (common in England) *G. Mollugo*, L. Dries black.

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